



# Høgskulen på Vestlandet

## Masteroppgave

MAFYS602-O-2022-VÅR-FLOWassign

### Predefinert informasjon

Startdato:	09-05-2022 09:00	Termin:	2022 VÅR
Sluttdato:	16-05-2022 14:00	Vurderingsform:	Norsk 6-trinns skala (A-F)
Eksamensform:	Masteroppgave		
Flowkode:	203 MAFYS602 1 O 2022 VÅR		
Intern sensor:	(Anonymisert)		

### Deltaker

Kandidatnr.:	417
--------------	-----

### Informasjon fra deltaker

Antall ord *:	6729
---------------	------

Egenerklæring \*: Ja

Jeg bekrefter at jeg har Ja registrert oppgavetittelen på norsk og engelsk i StudentWeb og vet at denne vil stå på vitnemålet mitt \*:

Jeg godkjenner autalen om publisering av masteroppgaven min \*

Ja

Er masteroppgaven skrevet som del av et større forskningsprosjekt ved HVL? \*

Nei

Er masteroppgaven skrevet ved bedrift/uirksomhet i næringsliv eller offentlig sektor? \*

Nei



# MASTEROPPGÅVE

Physical activity and exercise in the treatment of sarcopenia according to European Working Group on Sarcopenia in Older People 2 (EWGSOP2): a scoping review

Fysisk aktivitet og trening som behandling av sarkopeni i følge European Working Group on Sarcopenia in Older People 2 (EWGSOP2): ein scoping review

Kristian Leira

Kandidatnummer: 417

Master i klinisk fysioterapi

Fordjupning i muskel-skjelett, ortopediske og revmatiske helseproblem

Høgskulen på Vestlandet, Bergen

Fakultet for helse- og sosialvitenskap

Institutt for helse og funksjon

Innleveringsdato: 16.05.22

Antall ord: 6729

Eg stadfestar at arbeidet er sjølvstendig utarbeida, og at referansar/kjeldetilvisingar til alle

kjelder som er brukt i arbeidet er oppgitt, jf. Forskrift om studium og eksamen ved Høgskulen på Vestlandet, § 12-1.

## PREFACE

Two years of continuing education has passed and is manifested by the completion of this thesis. These years have been different from my bachelor's years with the ongoing global pandemic of Corona-virus 19 which naturally formed barriers for the process of higher education. As an individual and a Norwegian I am proud of my own and our nation's ability to adapt to changing circumstances. I want to pay tribute to the work done by the many teachers, librarians, and advisors at the Western Norway University of Applied Science to facilitate the best possible conditions for learning and achieving a feeling of self-efficacy during this master's programme.

Furthermore, I would like to thank my fellow students for their commitment and positivity these two years and wish you all the best continuing on. It has been a challenging two years, but I will remain grateful for the time we have spent together honing our quest for knowledge and self-improvement to our own enrichment, but arguably equally important, for the very best of our future patients.

Personally, I would like to extend a gratitude towards Trond Arve Pettersen for his commitment and guidance on proofreading of this thesis. And to my supervisor Bård Bogen, PhD and associate professor at Western Norway University of Applied Science, your help and guidance in this comprehensive process of conducting my own thesis has been invaluable and I am very grateful for all your feedback and well-meaning professional discussions.

Kristian Leira

### Note:

This thesis and scoping review is written with the intention of publishing in the British Medical Journal Open (BMJ Open) Sports and Exercise Medicine, and the guidelines for the author can be found in appendix 4. Figures will be submitted separately to the journal BMJ Open in unison with authors guidelines if accepted in the future, but in this thesis they will be presented in the text to improve the experience for the reader.

## **ABSTRACT**

*Objectives:* Sarcopenia, or age-related muscle loss is widespread. However, several definitions of sarcopenia exist, which has hampered progress in how to assess and treat sarcopenia. In 2019, the European Working Group on Sarcopenia in Older People published a new, evidence-based screening-algorithm (EWGSOP2), but the uptake of this for research purposes is not clear. Therefore, the objective of this study is to conduct a comprehensive search for empirical research and map out what has been done and is planned done on physical activity or exercise in the treatment of people with sarcopenia according to EWGSOP2's criteria of sarcopenia. This scoping review will also evaluate the possibilities for conducting a systematic review and meta-analysis on the effects of physical activity and exercise in combating sarcopenia according to the latest criteria.

*Material and Methods:* A comprehensive, systematic search was done in eight databases (CINAHL, Cochrane library, Epistemonikos, PEDro, Medline EMBASE, Medline Ovid, Google Scholar, and US National Library of Medicine) for experimental trials, protocols or systematic reviews published in English or Norwegian between 2017 and 2022, on physical activity or exercise in treating sarcopenia according to the latest definition of criteria. The PEDro checklist was used to assess the methodological quality of the eligible clinical trials.

*Results:* This scoping review included five records. Of these, three were protocols for future projects, one was a systematic review, and one was a randomised controlled trial. In total 335 adults with sarcopenia, aged either  $\geq 60$  or  $\geq 65$ , were included. Most of the records originated from Europe, and the most used tests for identifying sarcopenia were tests for limb strength and gait performance; but one protocol also used imaging technologies. Most interventions included multimodal training modalities, while one study used aerobic endurance training on exercise bike, and one used Tai Chi. The training interventions had similar description of training frequency and session duration.

*Conclusion:* The results reveal a scarcity on clinical trials with EWGSOP2 criteria. The planned projects are mostly planning to implement multimodal exercise interventions designed for prevention of falls and as such might not meet recommended guidelines for exercise prescription for older and sarcopenic subjects. More studies are needed before a recommendation of conducting a systematic review and meta-analysis on effect of exercise and physical activity in treating sarcopenia according to EWGSOP2 can be made.

## ABSTRAKT NORSK

*Hensikt:* I 2019 publiserte European Working Group on Sarcopenia in Older People ei ny algoritme for vurdering av sarkopeni (EWGSOP2) med nye kriteria for diagnosen. Påverkinga av denne nye algoritmen i forskning og behandling er ikkje klart. Derfor er målet med dette studiet å gjennomføre eit omfattande søk etter empirisk forskning gjort på fysisk aktivitet og trening i behandling av sarkopeni etter EWGSOP2, så kartlegge og presentere dette. Denne scoping reviewen vil òg vurdere moglegheitene for å gjennomføre ei systematisk oversikt og meta-analyse av effekten på fysisk aktivitet og trening i behandling av sarkopeni etter EWGSOP2.

*Materiale og metode:* Eit omfattande, systematisk søk i åtte ulike databasar (CINAHL, Cochrane library, Epistemonikos, PEDro, Medline EMBASE, Medline Ovid, Google Scholar, og US National Library of Medicine) etter eksperimentell litteratur, protokollar og systematiske oversikter om behandling av sarkopeni etter siste kriteria med trening og fysisk aktivitet, publisert enten på engelsk eller norsk i mellom 2017 og 2022. PEDro-sjekklista blei brukt for å vurdere kvalitet av metode i passande artiklar.

*Resultat:* Denne scoping reviewen inkluderte fem referansar. Tre av desse var protokollar for framtidige prosjekt, ein systematisk oversikt og ein randomisert kontrollert studie. Totalt var det 335 deltakarar i studiane som var diagnostisert med sarkopeni, i alderen enten  $\geq 60$  eller  $\geq 65$  år. Størsteparten av referansane hadde opphav frå Europa og dei mest brukte testane for å identifisere sarkopeni var testar for styrke i ekstremitetane og gangfunksjon; eit studie brukte også bildeteknologi til dette. Dei mest brukte intervensjonane var multi-modale treningsprogram, med eit studie vurderer aerob uthaldstrening på treningssykkel og eit anna vurderer Tai Chi. Treningsintervensjonane hadde liknande beskriving av treningsfrekvens og lengde per økt.

*Konklusjon:* Resultatet viser mangel på kliniske studiar med EWGSOP2 kriteria. Størsteparten av dei planlagde prosjekta møter ikkje anbefalte retningslinjer for treningsbehandling av eldre og pasientar med sarkopeni. Før ein kan anbefale å gjennomføre ei systematisk oversikt med meta-analyser på effekten av trening og fysisk aktivitet i behandling av sarkopeni med EWGSOP2 kriteria må det gjennomførast fleire kliniske studiar på emnet.

# TABLE OF CONTENTS

<b>1. THEORETICAL BACKGROUND AND INTRODUCTION</b> .....	7
<b>1.1 Sarcopenia: definition, prevalence, and implications</b> .....	7
<b>1.2 Treating sarcopenia</b> .....	9
<b>1.3 Aim of the review</b> .....	10
<b>2. METHODS AND MATERIALS</b> .....	11
<b>2.1 Theoretical perspective</b> .....	11
<b>2.2 Protocol and registration</b> .....	11
<b>2.3 Selection of records</b> .....	12
<b>2.4 Search strategy for identifying results</b> .....	13
2.4.1 Preliminary search.....	13
2.4.2 Primary search.....	13
2.4.3 Supplementary search.....	13
<b>2.5 Study selection</b> .....	14
<b>2.6 Charting and evaluation of data</b> .....	15
<b>2.7 Ethical considerations</b> .....	15
<b>3. RESULTS</b> .....	17
<b>3.1 Sources of evidence</b> .....	17
<b>3.2 Characteristics of sources of evidence</b> .....	17
3.2.1 Description of publication details, demographics, and outcome measures.....	17
3.2.2 Description of exercise and physical activity interventions .....	22
<b>3.3 Quality assessment</b> .....	26
<b>4. DISCUSSION</b> .....	26
<b>4.1 Main findings</b> .....	26
<b>4.2 Exercise and physical activity</b> .....	29
<b>4.3 Discussion of the method</b> .....	32
4.3.1 Strengths and limitations .....	32
4.3.2 Discussion of included studies.....	32
<b>5. CONCLUSION</b> .....	33
<b>6. REFERENCES</b> .....	34

**Overview of figures**

FIGURE 1: EWGSOP2 ALGORITHM FOR IDENTIFYING SARCOPENIA, ADAPTED FROM CRUZ-JENTOFT ET AL. (2019) ..... 8  
FIGURE 2: PRISMA FLOW-CHART ..... 16

**Overview of tables**

TABLE 1: EWGSOP2 CUT-OFF VALUES..... 8  
TABLE 2: CRITERIA FOR ELIGIBILITY ..... 12  
TABLE 3: PICO ..... 13  
TABLE 4: EXTRACTION OF DATA..... 15  
TABLE 5: STUDY CHARACTERISTICS..... 21  
TABLE 6: DESCRIPTION OF INTERVENTION ..... 25  
TABLE 7: PEDRO ASSESSMENT ..... 26

**Overview of appendix**

- Appendix 1: Strategy for conducting primary search
- Appendix 2: Screenshots of grey literature
- Appendix 3: Secondary outcome measures
- Appendix 4: BMJ Open Sport & Exercise medicine authors guidelines

# 1. THEORETICAL BACKGROUND AND INTRODUCTION

## 1.1 Sarcopenia: definition, prevalence, and implications

Aging is a universal process that affects all organisms. One of the hallmarks of aging is the loss of muscle strength and muscle mass, where an old person can start to have difficulties in walking stairs or lifting heavy objects.<sup>1,2</sup> 'Frailty' is a term describing an older person with little reserve capacity. It is a condition that is not disease-specific and is associated with risk of adverse events.<sup>3</sup> Loss of muscle strength and muscle mass are the key aspects of the physical side of frailty.<sup>4</sup> Muscle wasting and loss of strength with age was labelled as sarcopenia by Irwin Rosenberg in 1989, as he noted that no other decline with age was as dramatic or significant on mobility and independence as the reduction in lean body mass.<sup>5</sup> Although multifactorial, a decline in physical activity and increased sedentary behaviour manifest themselves as key factors in the development of sarcopenia.<sup>6-8</sup> In Greek 'sarx' means flesh, and 'penia' means loss, and the diagnosis can develop as either primary or secondary sarcopenia. In primary sarcopenia, there is seemingly no specific cause other than age, while in secondary sarcopenia other different causal factors apply as well. Causal factors include systemic inflammatory diseases, malnutrition, or physical health issues that limit mobility and physical activity. As these factors have been better understood, sarcopenia as a disease is no longer primarily associated with age, but also a result of causes beyond ageing.<sup>9</sup>

Originally considered a wasting disease, early definitions of sarcopenia involved quantifying muscle mass by imaging (CT, MRI, ultrasound, dual x-ray absorptiometry) or bioelectrical impedance. However, as research accumulated, it became increasingly clear that muscle *strength* was a better predictor of adverse outcomes than muscle mass,<sup>10</sup> and in one of the first consensus-based operationalisations, the European Working Group on Sarcopenia in Older People (EWGSOP), muscle strength and physical function were included as criteria. Still, low muscle mass was the entry point for determining if someone was sarcopenic, and poor physical function and strength were only indicators for the severity of the condition. This was criticized, as muscle strength consistently has been found to be better for predicting health-related outcomes among older people.<sup>11,12</sup>



In 2019, the European Working Group on Sarcopenia in Older People published a new definition (EWGSOP2) to advance diagnostic criteria and treatment of persons with sarcopenia, changing the focus from muscle quantity to muscle strength, with cut-off values presented in table 1 to aid in decision making on initiating treatment. These main tests to determine probable sarcopenia are hand grip strength test (HGS) or five sit to stand test (5-STs). Such tests are combined with evaluation of physical performance of gait speed such as

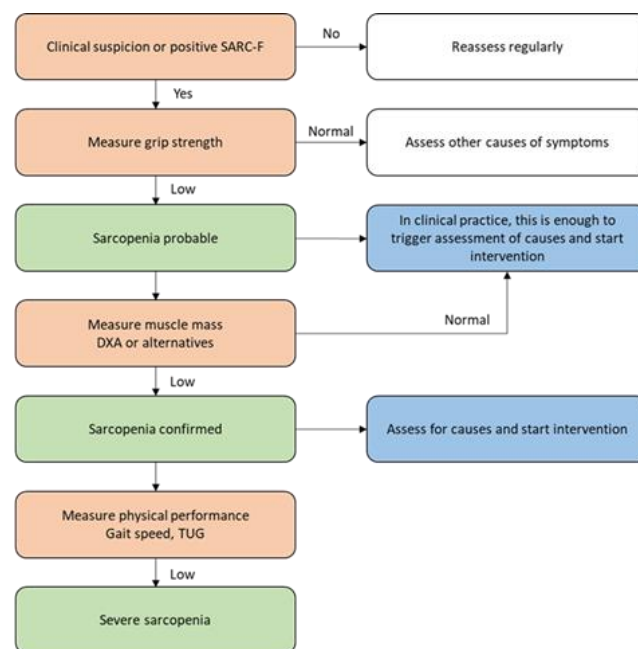


Figure 1: EWGSOP2 algorithm for identifying sarcopenia, adapted from Cruz-Jentoft et al. (2019)

Short Physical Performance Battery (SPPB), Timed up and Go test (TUG) or six-minute walk test (6MWT) to assess the severity of sarcopenia. The measurement of muscle quantity and quality is still recommended, but mainly for research purposes. The questionnaire SARC-F can also be used to detect severe cases.<sup>9</sup> This change is important as rates of sarcopenia will differ depending on which criteria are used. In a systematic review by Fernandes, et al.<sup>13</sup> the authors compared the prevalence of sarcopenia using the EWGSOP1 and EWGSOP2 criteria on the same sample, fewer cases were identified using the updated criteria.

Test	Cut-off value for men	Cut-off value for women
<b>Tests for low strength to identify probable sarcopenia</b>		
<b>Hand grip strength</b>	<27kg	<16kg
<b>Five sit to stand</b>	>15 seconds for five rises	
<b>Test for performance and severity for sarcopenia</b>		
<b>Gait speed</b>	≤0.8 meters per second	
<b>Short Physical Performance Battery</b>	≤8 point score	
<b>Timed up and Go</b>	≥20 seconds	
<b>400-meter walk test</b>	Not able to complete or ≥6 minutes for completion	

Table 1: EWGSOP2 Cut-off values

Using criteria based on muscle mass *and* strength *or* physical performance-testing, Cruz-Jentoft, et al. <sup>14</sup> found that sarcopenia was evident in up to 29 percent of the older adults living in the community, and up to 33 percent living in long-term care institutions, as well as 10 percent of those in acute hospital care, with a reported increase in prevalence with increasing age. The prevalence is likely to increase as longevity increases, and older adults aged 60 and over are expected to make up 21 percent of the total population (numbered at 2 billion people in 2050), with a predicted surge of sarcopenia affecting more than 200 million at that time.<sup>15,16</sup> This demographic change has substantial socioeconomical implications, as a UK-based study found the cost of treating patients with muscle weaknesses to be on average £2707 more expensive per person per year than patients without muscle weaknesses.<sup>17</sup> Effective treatment of, and prevention of sarcopenia is imperative for sustainable health care systems.<sup>18</sup>

## 1.2 Treating sarcopenia

There are numerous proposed treatments to combat established sarcopenia, the most frequently studied interventions seem to be nutritional strategies, exercise, general physical activity, and prescribed drugs.<sup>19</sup> Physical activity is easily accessible, and lack of it is accounted for three million preventable deaths yearly worldwide, placing fourth as a leading risk factor for chronic diseases with estimations of roughly 30 percent of adults not being sufficiently physically active on a global scale.<sup>20,21</sup>

Several potential types of exercises and physical activities are recommended to combat loss of strength, muscle wasting, and decline in physical performance in older individuals. The group of Beckwee, et al. <sup>22</sup> found in their systematic umbrella review that resistance training with high volume and intensity has the highest level of evidence for being effective, with multimodal exercises supported by moderate quality evidence. Multimodal exercises involve a combination of training modalities such as balance, gait, aerobic and resistance training.

Key principles of exercise interventions are specificity, overload, progression, individualization and periodisation, and these should be embedded in the design of any exercise intervention to enable positive training responses and desired outcomes.<sup>23,24</sup> There has been reports that training programs offered to older people when treating sarcopenia or

frailty overlook or misapply such exercise principles.<sup>25</sup> As such, this review will primarily survey strategies for exercise and physical activity as they are promising strategies for treating and preventing sarcopenia.<sup>14,26</sup>

### **1.3 Aim of the review**

With the prevalence and implications of sarcopenia in mind, there has been conducted a considerable amount of research aimed at exploring the extent of sarcopenia and treatments of the condition, with well over 13,000 articles published globally between 2001 and 2020 and a large increase in number of citations.<sup>27,28</sup>

As the objective of EWGSOP2 was to increase the consistency of research designs, clinical diagnoses, and care for people with sarcopenia,<sup>9</sup> the goal of this review is to map out research that has been done and that is planned, regarding physical activity or exercise in the treatment of sarcopenia according to the latest criteria, and exploring its origin, design, consistency to criteria and limitations. Agreement and unification on the definition will facilitate further development for treatment of the condition.<sup>29</sup>

The secondary aim of this review is to evaluate the possibility of conducting a systematic review and meta-analysis on the effectiveness of physical activity and exercise in treating sarcopenia using the latest EWGSOP2 diagnostic criteria to establish pragmatic recommendations on how to best treat the condition. This is an important evaluation as there has been raised ethical concerns around the production of systematic reviews without considering what has already been done as well as concerns about enrolling patients into clinical trials assessing already answered questions.<sup>30</sup> In the recent systematic reviews of Moore, et al.<sup>31</sup> and Escriche-Escuder, et al.<sup>32</sup> no clinical trials done with the EWGSOP2 criteria for sarcopenia were found. Before attempting another systematic review for new clinical trials, exploring the field with a wider scope seems prudent.

## 2. METHODS AND MATERIALS

### 2.1 Theoretical perspective

Performing a scoping review was deemed a fitting answer to the aims of the review, as such reviews are conducted to synthesise and map out existing literature and should be performed when a body of evidence is large, complex, and otherwise not amenable for a more rigorous systematic review. Its' aim is to identify key concepts, nature, and extension of lengths of the research on a topic and bring together emerging literature in an area of research broader than a systematic review. As such, a range of study designs might be included.<sup>33</sup> It is not necessarily used to cover findings in deep detail, but rather used to identify what is available in existing, applicable research.<sup>34</sup> When a researcher assigns naturally occurring phenomena like changes in strength or muscle mass numerical values to statistically process it as an objective truth it is recognized as a positivistic perspective.<sup>35</sup>

A biomedical perspective grounded in a positivistic point of view, does not encompass the researcher as a free entity with beliefs and understandings of its own. The belief of total objectivity has been challenged in the postpositivist paradigm, recognizing that total objectivity is impossible.<sup>36</sup> The author of this thesis acknowledges that in the search of evidence-based practice, the researcher and the researched can never be independent or separated entities that do not influence each other. Hence, the findings will be interpreted within the authors' own framework of understanding of the matter and the world in a post-positivistic point of view.<sup>35</sup>

### 2.2 Protocol and registration

This review followed the Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) Checklist as a guide when performing the project.<sup>37</sup> A protocol was published on Open Science Framework (<https://osf.io/m6xrh/>) 23.03.22 before any results were obtained and extracted from the included sources. It can be identified by the following phrase: M6XRH. A change of title was done 16<sup>th</sup> of May 2022.

## 2.3 Selection of records

To be eligible for screening (table 2), the articles or protocols had to be experimental trials or systematic reviews written either in the Norwegian or English language and published the last five years from the date of search. In preliminary searches, it became clear that not many studies had been done since 2019. Therefore, to get an impression of the present field and how the field may develop in the coming years, it was decided that also published protocols for planned and ongoing studies would be eligible for inclusion. To be included, studies had to use the EWGSOP2 criteria for inclusion. Although the criteria were published in 2019, the search was set back to 2017 to see whether any studies had been done using the criteria before they were published. Further, the intervention arm of the study should include exercise or physical activity.

Asia has its own working group on sarcopenia with different criteria of diagnosis, and there is as such a large amount of publications in other languages than English, with Japan being the nation with the second most publications on sarcopenia.<sup>27</sup> Therefore, the limitation of English or Norwegian languages was set to find the most relevant trials using EWGSOP2 instead of the Asian Working Group on Sarcopenia criteria. Moreover, the exclusion of research on animals and similar diagnoses to sarcopenia or combined diagnoses such as sarcopenic obesity were set due to the secondary aim of the review. Inclusion of similar diagnoses would have reduced the precision of such aim, as is pointed out by Moore, et al.<sup>31</sup>. There were no limitations set to age of participants; although sarcopenia is more common in older individuals, it can transpire at earlier stages in life.<sup>9</sup>

Criteria for inclusion	<ul style="list-style-type: none"> <li>• Latest definition of sarcopenia EWGSOP2</li> <li>• Experimental literature or systematic reviews using physical activity or exercise as primary intervention</li> <li>• English or Norwegian</li> <li>• January 2017 to January 2022 (supplemental search was done in March 2022)</li> </ul>
Criteria for exclusion	<ul style="list-style-type: none"> <li>• Other similar diagnoses, e.g., osteosarcopenia, sarcopenic obesity, cachexia</li> <li>• Other languages than English and Norwegian</li> <li>• Research conducted on animals</li> </ul>

Table 2: Criteria for eligibility

## 2.4 Search strategy for identifying results

### 2.4.1 Preliminary search

As suggested by Peters, et al. <sup>33</sup>, an explorative, preliminary search was performed August 19<sup>th</sup> 2021 in MEDLINE Ovid and Embase, as well as CINAHL, to find suitable descriptive words for the primary search and to establish the PICO form below, see table 3.

Population (P)	Intervention (I)	Comparison (C)	Outcome (O)
Sarcopenia defined by EWGSOP2 criteria	Physical activity and/or exercise and/or resistance exercise	Not applicable	All

Table 3: PICO

### 2.4.2 Primary search

A consultation with a research librarian for guidance on selection of databases was done to prepare for the primary search, which was performed January 5<sup>th</sup>, 2022, in the following databases: CINAHL, Cochrane library, Epistemonikos, PEDro, Medline EMBASE, and Medline Ovid. The primary search was done using phrases set out in the PICO-form in table 3 and then extended to cover a comprehensive search to identify any work done on sarcopenia, physical activity, and exercise. Finally, variants of strength and resistance training was added, as the systematic umbrella review by Beckwee, et al. <sup>22</sup> found resistance training to have the highest level of evidence for improving sarcopenia. Details of the search strategy are available in appendix 1.

### 2.4.3 Supplementary search

The supplementary search for grey literature was done in March 2022 in the US National Library of Medicine (USNLM) through clinicaltrials.gov and Google Scholar (GS). An initial explorative search in GS with search phrase “Sarcopenia” AND (“physical activity” OR

“exercise”) on full text articles between 2017 and 2022 returned too many records for this review. A further search limitation was set, specifying to only search in article titles, as advised by Haddaway, et al.<sup>38</sup>, to increase the quality of the findings. An identical strategy was used in the search of USNLM.

Finally, a search of references and citations of the included records was performed. This did not provide any further findings.

## 2.5 Study selection

The findings from the primary search was uploaded into the EndNote20 reference management tool, and organized in groups for each database respectively.<sup>39</sup> Duplicates were removed in two stages by the author, first in EndNote20 by manually sorting the records. The second stage of screening for duplicates was performed in Rayyan, which is a web and mobile app for sorting references in systematic reviews.<sup>40</sup> Here the references were screened manually, and any remaining duplicates were removed.

From the supplementary grey search, all findings from GS were uploaded to EndNote20 and manually sorted as described in the primary search. The findings from USNLM were screened manually using an Excel spreadsheet, as records were technically difficult to upload to EndNote20 and Rayyan.

After the sorting and detection of duplicates was completed, using Rayyan, two independent reviewers (the author (KL) and a student (SH) at the master program in Evidence-Based Practice at Western Norway University of Applied Science) screened each record from the primary search for eligibility of inclusion using Rayyan. This is done in three stages, blinded for each other’s decisions; first the articles were screened by title, then by abstract, and finally as full text. A third reviewer, the supervisor of the thesis (BB), was consulted for any discrepancies in outcomes.

The supplementary searches of grey literature were screened manually using an Excel spreadsheet by the author in one comprehensive session, screening each reference in its

entirety instead of using a three-stage process. The supervisor was consulted in case of any uncertainty of selection.

**2.6 Charting and evaluation of data**

The author charted the data using an Excel spreadsheet, including the data points as per table 4 below. An evaluation of eligible studies was performed using the PEDro-scale, which is a rating scale to assess the methodological quality of clinical trials.<sup>41</sup>

<p>Characteristics of sources</p>	<ul style="list-style-type: none"> <li>• Author, country of origin, year of publication</li> <li>• Demographic description of included participants</li> <li>• Methods used, randomisation procedures</li> <li>• Diagnostic criteria, outcomes</li> <li>• Context of intervention (i.e., location, follow-up)</li> </ul>
<p>Description of exercise and physical activity</p>	<ul style="list-style-type: none"> <li>• Type of intervention</li> <li>• Duration in weeks and per session</li> <li>• Training frequency</li> <li>• Intensity measures</li> <li>• Reported effects if any</li> </ul>

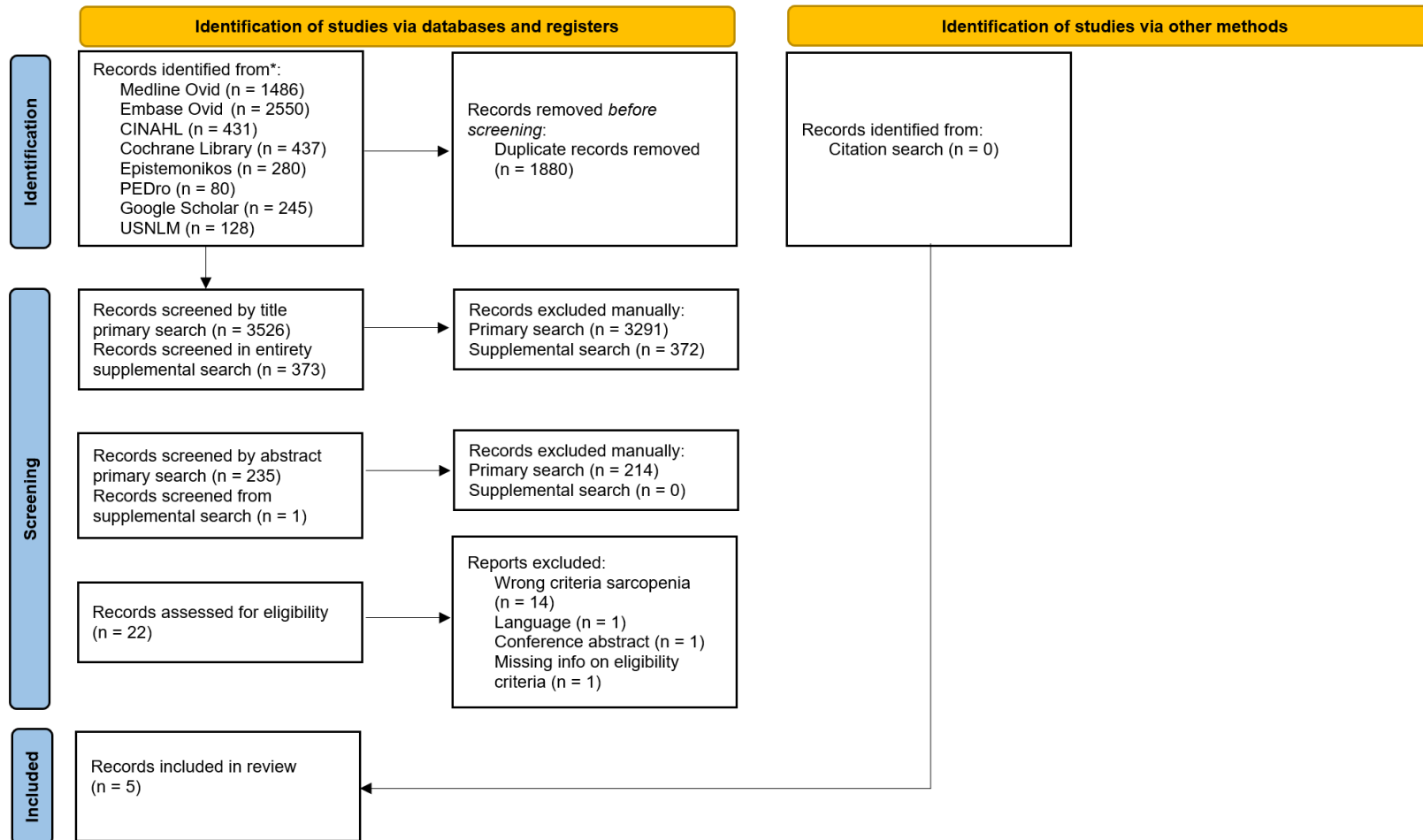
*Table 4: Extraction of data*

**2.7 Ethical considerations**

Only two of five included references stated ethical approval from a committee, the remaining three references did not state ethical approval. All references had exercise and physical activity-based or combined exercise and nutritional support interventions which in general are considered safe and appropriate choices when treating sarcopenia. No other evident ethical challenges were presented in this thesis.



PRISMA 2020 flow diagram for new systematic reviews which included searches of databases, registers and other sources



From: Page MJ, McKenzie JE, Bossuet PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *BMJ* 2021;372:n71. doi: 10.1136/bmj.n71. For more information, visit: <http://www.prisma-statement.org/>

Figure 2: PRISMA flow-chart

## 3. RESULTS

### 3.1 Sources of evidence

The selection process of studies is presented in the PRISMA flow-chart in figure 2.

Based on the primary search, a total of 5,264 articles were uploaded to EndNote20 and organized in groups for each respective database. 1,738 records were removed as duplicates in EndNote20 and Rayyan. The remaining 3,526 records were screened in Rayyan as described. A total of 21 records were evaluated in full text, of which four were included in this review.

The supplementary search from GS returned over 18,600 records in the first explorative search, which was considered too extensive for this review. The second search, limited to title, gave 245 records. From USNLM another 128 records were found, in total 373 records from both databases, of which 142 were duplicates. Resulting in 231 records for screening.

The records from GS and USNLM were reviewed manually by the author using an Excel spreadsheet, and the supervisor was consulted in case of uncertainty. From this, one study was included in the final review. Screenshots of the records from the supplementary search are included in appendix 2 as advised by Haddaway, et al.<sup>38</sup> to improve transparency of grey literature.

All the included records of this scoping review, five in total, were screened for references and citations without any further findings to add to the review.

### 3.2 Characteristics of sources of evidence

#### 3.2.1 Description of publication details, demographics, and outcome measures

Of the five included records, three were protocols for planned randomised controlled trials (RCT), of which two were published in USNLM,<sup>42,43</sup> and one in BMC Geriatrics<sup>44</sup> between 2020-2022. The other two were one RCT<sup>45</sup> and one systematic review<sup>32</sup>, both published 2021. Four records originated from Europe (Turkey, Belgium, Spain, and Spain), and one from Taiwan.

All five records reported EWGSOP2 as criteria for inclusion. The most used criteria were 5-STS, HGS, and/or gait speed assessments such as habitual gait speed over six meters or the SPPB. Two records reported they had EWGSOP2 as criteria for inclusion without specifying further details. The protocol of Dedejne, et al. <sup>44</sup> reported plans of assessing eligibility for inclusion via lean mass assessments using DXA. The RCT of Sen, et al. <sup>45</sup> and the protocol of Almazán <sup>42</sup> used and planned to use the recommended screening questionnaire SARC-F for inclusion.

The included systematic review by Escriche-Escuder, et al. <sup>32</sup> based the meta-analysis on the former EWGSOP1 definition of sarcopenia as they did not find any trials done with EWGSOP2. However, their goal was to systematically summarize the evidence on effect of therapeutic exercise according to EWGSOP2 *and* EWGSOP1 criteria. As such the criterion for inclusion in this scoping review is formally met, thus it was included. All included studies in the systematic review did include HGS and five out of seven had evaluation of gait speed and 5-STS, but with EWGSOP1 criteria for scoring and identifying sarcopenia.

All included records had outcome measurements associated with the criteria for EWGSOP2, and assessment of HGS and gait speed were the most common outcome measures, both measures used in three out of five records. 5-STS was also used in three out of the five records, although some of these were part of the SPPB outcome. The protocol of Dedejne, et al. <sup>44</sup> reported plans to assess knee extension and flexion strength using an isokinetic dynamometer. Muscle mass was assessed or planned assessed in three articles by DXA or BIA.

The three protocols all published goals of recruiting between 60-180 participants. The completed RCT from Turkey included 100 individuals, with 10 persons withdrawing before completion, and a gender distribution of 86 women and 14 men. The reasons for withdrawing were stated as attendance failure (n=3), personal reasons (n=3), and follow-up failure (n=4). The included systematic review reported 235 participants, with 175 women and 60 men, and no dropouts from the included studies were reported. Limitation of age was similar as two records had criteria of  $\geq 60$  years, the three remaining had  $\geq 65$  years as minimum; one record had an additional limitation to max 80 years.

Only two of the studies reported where the candidates were (or were planned to be) recruited, both from community-dwelling older adults. All but one study stated the intervention location, where three stated the intervention location as the individuals' homes. The systematic review reported several locations: a gym and group setting, home-based, and in nursing homes. The completed RCT by Sen, et al. <sup>45</sup> reported weekly phone calls as follow-up and reminders to perform trainings. One record, the protocol by Dedeyne, et al. <sup>44</sup> specified the intention to have in-person follow-up every second week with adjustments to the training programme, done by personnel certified for the specific intervention. The same protocol also reported a comprehensive intervention strategy with multiple comparison groups, with and without nutritional support of both Omega-3 fatty acids and protein supplements or placebo equivalents.

Lead author, (year) Country	Method and publication type	Participants Start/end Sex m/f (Withdrawn per group I/C)	Reason for retiring I/C	Range of age in years, mean age I/C	Recruited from	Diagnostic criteria	Location for intervention	Person overlooking intervention, follow-up	Primary outcomes*
Escriche-Escuder, et al. <sup>32</sup> (2021) Spain	Systematic review: N= 7, 4 RCT, 3 non-randomised clinical trials	235/- 60/175	-	≥60	-	EWGSOP1 or EWGSOP2 (no values mentioned)	Gym setting, home-based and nursing home	Coaches, geriatric physiotherapist	SMI, HGS, 5-STS, SPPB, gait speed
Sen, et al. <sup>45</sup> (2021) Turkey	Randomised controlled trial	100/90 14/86 (4/6)	I: n=3 AF, n=1 PR/  C: n=4 FUF, n=2 PR	65-80,  73,0±4,8/72,7±5	Referred community dwelling inhabitants from 5 locations	SARC-F score ≥4, SPPB score ≤8 and gait speed ≤0.8m/s, 5-STS: no cut-off value presented	Home-based	Weekly telephone call reminders	TUG, 6MWT, BBS, QoL
Dedeyne, et al. <sup>44</sup> (2020) Belgium	Protocol for RCT, five-armed parallel assignment and nutritional intervention	Goal of recruiting 180	-	≥65	Local community in Belgium	HGS, 5-STS, gait speed, ALM by DXA	Home-based	Certified personnel, follow up every second week	Change in SPPB at W12 and W24 *
Almazán <sup>42</sup> (2022) Spain	Protocol for RCT, three-armed trial with parallel	Goal of recruiting 90	-	≥65	-	SARC-F ≥4 or handgrip strength <16 kg for	-	-	Up to W12: HGS, abundance and biodiversity of oral microbiota, ABC-

	assignment and control group					women and < 27 kg for men			16, FES-I, PSQI, HADS BF% *
Yen <sup>43</sup> (2021) Taiwan	Protocol for RCT, parallel assignment	Goal of recruiting 60	-	≥60	-	Diagnosis according to EWGSOP2 (no values mentioned)	Home-based	-	ASMM, HGS, 5-ST5

I/C = intervention/control, - = not reported, HGS = hand grip strength, SPPB = short physical performance battery, SMI = skeletal muscle mass index, AF = attendance failure, PR = personal reasons, FUF = follow-up failure, 5-ST5 = five sit to stand, TUG = timed up & go, 6MWT = 6-minute walk test, Berg Balance Scale, QoL = quality of life, ALM = appendicular lean mass, DXA = dual-energy x-ray absorptiometry, W = week, MM = muscle mass, MS = muscle strength, BC = body composition, ABC-16 = activities specific balance confidence scale, FES-I = falls efficacy scale – international, PSQI = pittsburgh sleep quality index, HADS = the hospital anxiety and depression scale, BF% = body fat percentage, ASMM = appendicular skeletal muscle mass.

Table 5: Study characteristics

\*Screen capture of complete list of secondary outcomes for each paper in appendix 3

### 3.2.2 Description of exercise and physical activity interventions

The systematic review by Escriche-Escuder, et al.<sup>32</sup> reported use of a variety of strength training modalities, ranging from machine-based training in a gym setting, to group- or home-based training using dumbbells, weight cuffs, or elastic bands. All seven studies in the systematic review had prescribed progression models, either periodized or non-periodized, with increases in resistance, repetitions, sets, or intensity.

Five of the seven studies in the same systematic review looked at progressive strength-training options with medium and high intensity levels. The two remaining studies had multimodal strength, balance, and gait or postural training programs. These two studies draw similarities to the multimodal exercise interventions reported in the training programs of the protocol by Dedeyne, et al.<sup>44</sup> and the RCT of Sen, et al.<sup>45</sup> included in this thesis, where the protocol states their intervention as a modified version of the Otago Exercise Program (OEP). OEP is recognized as the most widespread exercise program for fall prevention and includes a multimodal exercise plan for balance and strength by progressively adding weight cuffs and sets, as well as introducing balance exercises of increased difficulty, and with a separate plan for walking.<sup>46</sup>

The interventions of the RCT by Sen, et al.<sup>45</sup> in this thesis, and the two previously mentioned references from the systematic review by Escriche-Escuder, et al.<sup>32</sup> all seem comparable with OEP by way of description as the intervention of Dedeyne, et al.<sup>44</sup> is described, but they are not explicitly stated as versions of OEP. Three out of these four similar intervention strategies also encouraged participants to walk on a weekly basis as part of their intervention, with durations up to 100 minutes per week in addition to the training sessions.

Yen<sup>43</sup> reports in their protocol that they aim to investigate the effects of Tai Chi versus a multimodal program for balance and strength for their group of comparison. However, these interventions are poorly described in their protocol, and it is therefore difficult to draw out details of the exercise interventions the different groups are going to perform. Yet, it is stated that the session of Tai Chi lasted for approx. 60 minutes doing eight different exercises. The record by Almazán<sup>42</sup> had an entirely different training modality from the rest

of the records, with steady-state, medium-intensity, continuous training on exercise bike versus high-intensity interval training.

The total duration for the interventions with EWGSOP2 criteria did not differ greatly, with the shortest reported duration was eight weeks and the longest 16. The SR which included EWGSOP1 reported up to 36 weeks.

Every record except the protocol of Yen <sup>43</sup> measured intensity of training. The most used measures were BORG rating of perceived exertion<sup>47</sup> and/or repetition maximum (RM) which was reported in three records, while one protocol used heart rate max (HRM) between 70-95 percent as a measure of intensity on exercise bike. Only one protocol reported a planned measure of general physical activity levels during the period of intervention implementation.

As most of the included records in this review are protocols, only two studies reported measures of effect: Escriche-Escuder, et al. <sup>32</sup> and Sen, et al. <sup>45</sup>. Reported effects were increases in HGS, score of SPPB, Bergs Balance Scale (BBS), 5-STST, 6MWT, and TUG. There were no reports of increases in muscle mass.



Lead author, (year) Type	Type of training	Frequency per week (duration in weeks)	Duration (session)	Workout intensity measurement				Effects of training (records #3-5 are protocols and thus has no effects to present)	
				Sets/repetitions/progression model	% Of 1RM	Intensity	Heart rate (VO2max)	Physical	Psychological
Escriche-Escuder, et al. <sup>32</sup> (2021) Systematic review	Resistance training, periodized and non-periodized, Group- and home-based exercise consisting of strength, balance, and gait training, Educational leaflet	2-3 (12-36)	≤60 minutes, additional walking ≤100 minutes per week	1-3 sets/ linear and non-linear periodization, progressive increase in repetitions, resistance, or intensity	50-85%	Moderate-high, 10-12 BORG, 5-15RM, reported momentary exhaustion	- -	SMI no change, ↑HGS, ↑SPPB, ↑5-STS, ↑ gait speed in non-randomised trials only	-
Sen, et al. <sup>45</sup> (2021) RCT	Progressive strength & balance training, gait training outside, posture & stretching exercises	3 (12)	60 minutes	1-2/3-10/Incremental progression of training volume by adding sets or repetitions	-	Light, 10-12 BORG	- -	↑TUG, ↑6MWT, ↑BBS	↑QoL
Dedeyne, et al. <sup>44</sup> (2020) Protcol	Progressive strength & balance training, gait training in 10-minute bouts	3 strength and balance, 2 gait (12)	3 bouts of 10-minute gait training or similar total volume	Progressive increase of weight from 30% RM to 90% RM, new measurement when 90% is reached and restart at adjusted 60% of new RM	30-90%	Strength: estimated 1RM, with reevaluation of 1RM and adjusted progression thereafter. Balance:	- -	-	-

						incremental difficulty adjusted and individualized in 9 possible levels. Both: reevaluation and adjusting of intensity and other variables in week 2, 4, 6, 8 and 10			
Almazán <sup>42</sup> (2022) Protocol	HIIT vs MICT	3 (16)	<p>HIIT group: 4-minute intervals repeated 4 times, 3-minute active rest in between.</p> <p>MICT group steady continuous training for 40 minutes</p>	-	-	High and medium group	<p>HIIT group: 85-95% HRM. Medium group: 70% HRM</p> <p>(Measured at baseline to calculate training intensity)</p>	-	-
Yen <sup>43</sup> (2021) Protocol	Tai Chi vs stretching, strengthening and balance training	(8)	<p>40 minutes of tai chi, 10 minutes warm-up and cooldown.</p> <p>Comparison group intervention explained as strength, balance and stretching exercises</p>	-	-	-	-	-	-

1RM = repetition maximum, ↑ = improvement in score, ↓ = deterioration in score, - = not reported, RM = SMI = skeletal muscle mass index, TUG = timed up & go, 6MWT = 6-min walk test, BBS=Berg Balance Scale, QoL = quality of life, HIIT = high intensity interval training, MICT = medium intensity continuous training, HRM = heart rate max

Table 6: Description of intervention

### 3.3 Quality assessment

The PEDro-scale was only performed on the RCT by Sen, et al. <sup>45</sup>, as the remaining records are not eligible for evaluation, being either systematic reviews or protocols. The results are presented in table 7, scoring 6 points in total and as such is rated as ‘good’.<sup>41</sup>

Record	Score	Methodological quality	PEDro item number										
			1	2	3	4	5	6	7	8	9	10	11
Sen, et al. <sup>45</sup>	6	Good	Not scored	1	1	1	-	-	-	1	-	1	1

Table 7: PEDro assessment

## 4. DISCUSSION

### 4.1 Main findings

This review aimed at mapping out empirical research that had been done or was planned to be done involving exercise or physical activity to treat sarcopenia, according to the most recent definition (EWGSOP2). A second aim was exploring the possibility of conducting a systematic review examining the effectiveness of such therapeutic modalities in the near future. The main finding of this review is that there are few trials or systematic reviews investigating the effects of physical activity or exercise in treating sarcopenia according to the latest definition of EWGSOP2. In summary, only one RCT and three protocols for future projects was identified. One systematic review was also included in this review, as it formally met the criteria of this scoping review, but as earlier mentioned, it did not include any trials using the EWGSOP2 criteria.

As the change in definition published by Cruz-Jentoft, et al. <sup>9</sup> is still quite recent, it might not be surprising that few trials have been completed. However, as of April 22<sup>nd</sup> 2022, a search of citations on GS showed it had been cited well over 4,500 times since its release, suggesting that interest about sarcopenia in research communities is considerable. One can also speculate that there is a perceived need for unification about what sarcopenia means.

Furthermore, following the findings of Yuan, et al.<sup>27</sup> and Suzan and Suzan<sup>28</sup> that there is a large growth in the number of publications and citations related to sarcopenia, especially in the last decade, the next years may see a surge of trials.

A partial explanation for the almost complete absence of clinical trials done on sarcopenia with the most recent criteria might be the outbreak of the corona virus disease 19 (COVID-19) global pandemic. In a systematic review by Sathian, et al.<sup>48</sup>, the researchers looked at the impact of COVID-19 on clinical research and clinical trials. They found a substantial reduction in the number of clinical trials performed in most therapeutic areas not related to COVID-19 when comparing subject enrolment in trials from March through May 2019 with the same period in 2020. Studies on sarcopenia, that by nature include old and frail individuals would naturally be affected by safety measures of social distancing, quarantines, ethics committee approval, and precautionary principles for general wellbeing of their participants.

Most of the work done or planned done, originated from Europe, with one study from Taiwan. This finding coincides with the findings from Yuan, et al.<sup>27</sup>, describing North America, Europe, and Asia as the biggest contributors to sarcopenia-related publications. This is likely a phenomenon related to the demographic development in these regions, with falling birth rates and increased longevity, a larger part of the population consists of older adults.<sup>16</sup> This review also found an overrepresentation of women in the studies, which may change in the future as the gap in life expectancy seems to be narrowing, possibly due to changes on socioeconomical levels, e.g., a reduction in harmful lifestyle choices like smoking among men.<sup>49-51</sup>

The set criteria for age seemed to be relatively similar, however one study limited the maximum age to 80 years. As older individuals have a higher prevalence of presarcopenia<sup>52</sup> and suggested increase of prevalence of sarcopenia with older age<sup>14</sup> the limitation to 80 years can potentially lead to the loss of information on training effects in those who really are affected by the disease. Even though sarcopenia is no longer considered a disease of age, but rather a state of muscular weakness, it does not seem necessary to include participants younger than 60 years since the loss of strength suggests to accelerate after the age of 60.<sup>53</sup>

On the other hand, longitudinal studies looking at preventative measures to avoid developing sarcopenia such as chronic exercising among 60-year-olds and older could be valuable.

Only two studies with the most recent criteria reported where the participants were recruited from or where they were planning to recruit from, both reporting community-dwelling older adults. As the prevalence of sarcopenia is higher in residential care, the completed and planned studies seem to misrepresent individuals who may be severely affected by sarcopenia.<sup>14</sup> Individuals in residential care have shown to respond positively on physical training with increases in strength and mobility, as such they could be valuable participants when assessing effects of interventions on sarcopenia.<sup>54</sup>

Evaluation of strength and physical performance such as handgrip strength, chair rises and tests for gait speed were the most frequently used measures both for establishing sarcopenia as well as the most frequent reported outcome measure for evaluation of effect. This is an important finding as it reflects the intentions of the EWGSOP2 of simplifying screening and diagnosis of sarcopenia<sup>9</sup>, and might be a representation of what researchers and clinicians will use in the future.

One of four insights the EWGSOP2 presented were that measures of muscle quantity and quality are technically difficult to do accurately, but as the instruments used are refined, the value of muscle quality measurements is expected to increase in importance as a feature of sarcopenia.<sup>9</sup> For measurements of muscle quantity DXA and BIA were the most frequently used tests in this scoping review, though only one reference used it as a step in diagnosing participants with sarcopenia. To the authors knowledge there are few reports of increased muscle quantity in clinical trials treating sarcopenia. But as the EWGSOP2 still see value in such measurements for research purposes it still has potential use as an assessment of effectiveness of training interventions, perhaps more so in longer follow-up cases. The value of higher levels of muscle mass is not to be disregarded as it has been shown to reduce low-grade chronic inflammation in older adults which may aggravate sarcopenia.<sup>55</sup> The reduction in inflammation possibly happens through increased insulin sensitivity and increased energy expenditure and reduction of C-reactive protein concentration.<sup>55</sup>

No studies reported reversing of sarcopenia as an outcome measurement. In 2016 the diagnose of sarcopenia was recognised and classified with its own ICD-10 code.<sup>56</sup> For many diseases, mitigating the symptoms or removing the disease entirely is the goal of treatment. As it looks, very few studies have used sarcopenia in itself as the main outcome, posing the question of whether it is, by means of exercise or other interventions, possible to reverse the condition from sarcopenic to non-sarcopenic.

#### 4.2 Exercise and physical activity

Four out of five references eligible for this scoping review had either multimodal exercise programs aimed at increasing strength, balance, and walking performance, or used such programs to compare a different intervention, commonly done at individual's home. Such programs are well documented in prevention of falls and improvement of balance,<sup>46,57,58</sup> but are seemingly yet to be thoroughly investigated in treatment of sarcopenia as Beckwee, et al.<sup>22</sup> have found only moderate quality evidence for its support. A search on pubmed.gov performed April 24<sup>th</sup> 2022 on "*otago exercise program*" AND "*sarcopenia*" only produced two results; one RCT and one case report. As the OEP is a multimodal exercise program that progressively challenges the participants, it may have the potential to treat sarcopenia as well as risk of falling, and it is as such an interesting finding. On the other hand, Beckwee, et al.<sup>22</sup> also reported that there is higher quality evidence supporting training interventions designed around resistance training for improving muscle mass, strength, and physical performance in older people, which no trials in this scoping review with EWGSOP2 criteria used or planned to use.

The recent publication of Smith, et al.<sup>59</sup> looked at exercise prescription guidelines for older adults and populations sharing similar characteristics with sarcopenia. The recommendations of exercise prescriptions are similar between diagnoses, and the authors argues that there is no difference on how resistance training is prescribed whether an older individual is diagnosed as sarcopenic or not. Some similarities to these recommendations are shared in the observations from this scoping review, as most training interventions are performed two or three days a week, with one to three sets. However, only one of the records with EWGSOP2 criteria reported a high training intensity up to 90 percent of RM as recommended in the guidelines mentioned. Intensity of 80 percent of RM or more is also

supported by other recent authors and the positional statement from the National Strength and Conditioning Association when treating frail or sarcopenic patients.<sup>23,24</sup> Thus, an element of uncertainty seems evident in the formation of interventions for subjects diagnosed with sarcopenia according to EWGSOP2. On the other hand, most of the studies in the included systematic review involved a higher level of training intensity and personalized evaluation of resistance-level, progression and overload, and is as such more similar to the guidelines for exercise prescription.

One interesting observation was in the completed RCT as the researchers prescribed a multimodal exercise program with a fixed load of 0,5-kilogram weight cuffs for upper extremities and 0,5-1 kilogram for lower extremities and used these weights through the entire duration of the project. Thus missing the exercise prescription guidelines of Fragala, et al.<sup>24</sup> and Smith, et al.<sup>59</sup>. The protocol of Dedejne, et al.<sup>44</sup> had an interesting alteration to their multimodal exercise program by starting the weight of the used weight cuffs from an individualized level of 30 percent of estimated RM. Then they plan on progressively loading the individuals up to 90 percent of estimated RM. This is an interesting alteration to the OEP, making the training program more specific for treating sarcopenia in line with the mentioned guidelines. Admittedly the choice of a standard weight might be a safe and pragmatic option to start with. This can potentially be progressed with higher speeds and more repetitions instead of higher load for increased power production and training volume which might improve functional performance and ability to perform activities of daily living.<sup>23,59</sup>

Two included protocols, Almazán<sup>42</sup> and Yen<sup>43</sup> differed from the rest in how they approached the training intervention. One aimed to investigate the use of exercise bike at two different set intensities and the other the use of Tai Chi. Neither of these interventions meets the recommended exercise principles of specificity, progression, or overload as Fragala, et al.<sup>24</sup> and Hurst, et al.<sup>23</sup> recommends when treating sarcopenic, old or frail individuals. However, one argument to be made is that any activity that reduces the amount of time being sedentary can possibly reduce the risk of acquiring sarcopenia as increased physical activity among older people has shown decreased risk for sarcopenia.<sup>26</sup> Likewise, higher levels of sedentary behaviour among adults aged 60 or more has shown a 33 percent

increase in risk of sarcopenia per additional hour spent sitting down on a daily basis.<sup>6</sup> Whether this is enough to reverse criteria for sarcopenia as diagnosis remains to be seen.

Tracking general activity was only planned in one protocol using MoveMonitor +, a wearable inertial measurement unit. This finding is important as more studies should seek to emulate this to control for the possibilities of participants changing levels of activity outside of the intended exercise intervention. Such changes of activity levels can possibly lead to an interference effect when measuring outcomes such as performance in balance, gait speed and muscular strength. Activity tracking might alter the habits of physical activity in participants, as use of accelerometers has shown small, but significant increases in physical activity.<sup>60</sup> It raises the question of whether the tracking of physical activity can create a self-reinforcing circle with positive changes in lifestyle in older people with sarcopenia.

Excluding the systematic review that did not include any studies using EWGSOP2, duration of the interventions did not differ greatly. The longest planned training intervention was 16 weeks and the shortest 8. Hurst, et al.<sup>23</sup> and Beckwee, et al.<sup>22</sup> recommends training interventions to last at the very least 6-12 weeks.

Based on the findings in this scoping review a consideration regarding conducting a systematic review on the effects of physical activity and exercise in treatment of sarcopenia cannot be recommended as of now, as there has only been conducted one RCT and only a few planned projects have been found in this comprehensive search. Evidence for treatment of sarcopenia with the EWGSOP2 criteria with exercise and physical activity remains sparse. This in the same manner as Moore, et al.<sup>31</sup> concluded in 2020 for future directions, and proposes clinicians to use alternative guidelines on exercise in older people until the base of evidence expands. This might very well still be a valid recommendation, as Smith, et al.<sup>59</sup> claims whether an individual is sarcopenic or not does not alter prescription of resistance exercise and focus should be on long-term adherence to strength training. Furthermore, the same authors note that having so many different definitions of sarcopenia might do more harm than good, similar to the message of Moore, et al.<sup>31</sup> and Connolly, et al.<sup>61</sup> with a need for unification and precision in identifying, measuring and treating sarcopenia.



## 4.3 Discussion of the method

### 4.3.1 Strengths and limitations

The project was done to explore what has been done on the matter and possibilities for conducting a systematic review on the effectiveness of training on sarcopenia with strict criteria for diagnosing. A scoping review was deemed a good choice for this project as it is used to get an overview of the field of research on a broad matter.

A thorough search was done under guidance of expertise to identify any relevant sources in a broad sample of databases, with additional searches for grey literature. Two independent reviewers manually processed all records from the primary search, consulting a third reviewer if needed. The grey literature review was done manually by the author, a third reviewer was consulted when uncertainty of inclusion arose; this was done as human resources was scarce, and the time of the second reviewer was prioritized for the primary search.

In order to meet the secondary goal of the scoping review, narrow criteria for eligibility were set to rule out the common comorbidities, like e.g., osteosarcopenia, etc. The goal was to obtain more homogenous results. This was met with regards to similar demographic description, as ages were either  $\geq 60$  or  $\geq 65$  years, with one study capping the age at 80 years maximum, and most of the studies coming from Europe, and close to 80 percent female participation. The downside of such a homogenous selection was that it limited the amount of eligible literature. On the other hand, three protocols for planned projects that met these criteria were found. If these projects are finalized, they will be interesting studies for anyone wanting to perform a systematic review with comparable criteria for eligibility as this scoping review.

### 4.3.2 Discussion of included studies

A PEDro-scale was implemented to assess methodological quality of the included trials. Only one study was eligible for this evaluation, and it was rated at 6/10, which indicates a good rating. Blinding was the main issue, possibly as it is harder to blind the observers and

participants for the intervention when the intervention is complex, e.g., exercises instead of taking a pill.

The included systematic review did not find any references meeting the eligibility criteria in this scoping review, being compliance with the EWGSOP2 criteria. As such, it could have been removed from the project, but the author and the supervisor agreed that it was a finding worthy of inclusion as it reinforced the scarcity of literature on the matter. It could have been taken out of the results and merely discussed as a noteworthy observation, but as it had similarities to several of the remaining references and this scoping review does not assess or analyse measures of effect, the author decided to include and describe it in the review.

## 5. CONCLUSION

The results of this scoping review show that there has been limited work and research on the matter. The global spread of the COVID-19 pandemic has most likely had an impact on this, as there has been a staggering reduction in enrolments of clinical trials in most therapeutic areas.

References included in this review reported EWGSOP2 as criteria for eligibility, however only one RCT was completed as such. Most participants were women between 65-80 years of age recruited from the local community. The most used tests for establishing sarcopenia were five sit-to-stand, hand grip strength and various gait tests measuring velocity. Regarding outcome measures the most common measures related to sarcopenia were hand grip strength and gait speed. Only one study planned to use measures of muscle mass as criteria for inclusion. Reported exercise programs were often multimodal and mainly included components for prevention of falls like the Otago Exercise Program.

Future studies evaluating treatments of sarcopenia could probably benefit from unification and precision in identifying and measuring sarcopenia, so that exercise interventions can assess sound principles of exercise science put forth by several recent authors when treating the condition.<sup>23,59</sup> More studies are needed before a recommendation of conducting a

systematic review and meta-analysis on effect of exercise and physical activity in treating sarcopenia according to EWGSOP2 can be made.

## 6. REFERENCES

1. Ferrucci L, de Cabo R, Knuth ND, et al. Of Greek Heroes, Wiggling Worms, Mighty Mice, and Old Body Builders. *The Journals of Gerontology: Series A* 2011;67A(1):13-16. doi: 10.1093/gerona/67A(1):13-16
2. Sayer AA, Robinson SM, Patel HP, et al. New horizons in the pathogenesis, diagnosis and management of sarcopenia. *Age and Ageing* 2013;42(2):145-50. doi: 10.1093/ageing/afs191
3. Fried LP, Tangen CM, Walston J, et al. Frailty in Older Adults: Evidence for a Phenotype. *The Journals of Gerontology: Series A* 2001;56(3):M146-M57. doi: 10.1093/gerona/56.3.M146
4. Cesari M, Landi F, Vellas B, et al. Sarcopenia and Physical Frailty: Two Sides of the Same Coin. *Frontiers in Aging Neuroscience* 2014;6 doi: 10.3389/fnagi.2014.00192
5. Rosenberg IH. Sarcopenia: Origins and Clinical Relevance. *The Journal of Nutrition* 1997;127(5):990S-91S. doi: 10.1093/jn/127.5.990S
6. Gianoudis J, Bailey CA, Daly RM. Associations between sedentary behaviour and body composition, muscle function and sarcopenia in community-dwelling older adults. *Osteoporosis International* 2015;26(2):571-79. doi: 10.1007/s00198-014-2895-y
7. Morley JE, Baumgartner RN, Roubenoff R, et al. Sarcopenia. *Journal of Laboratory and Clinical Medicine* 2001;137(4):231-43. doi: <https://doi.org/10.1067/mlc.2001.113504>
8. Sakuma K, Aoi W, Yamaguchi A. The Intriguing Regulators of Muscle Mass in Sarcopenia and Muscular Dystrophy. *Frontiers in Aging Neuroscience* 2014;6 doi: 10.3389/fnagi.2014.00230
9. Cruz-Jentoft AJ, Bahat G, Bauer J, et al. Sarcopenia: revised European consensus on definition and diagnosis. *Age and ageing* 2019;48(1):16-31. doi: 10.1093/ageing/afy169
10. Clark BC, Manini TM. Sarcopenia =/= dynapenia. *J Gerontol A Biol Sci Med Sci* 2008;63(8):829-34. doi: 10.1093/gerona/63.8.829
11. Kim YH, Kim KI, Paik NJ, et al. Muscle strength: A better index of low physical performance than muscle mass in older adults. *Geriatr Gerontol Int* 2016;16(5):577-85. doi: 10.1111/ggi.12514 [published Online First: 20150528]

12. Menant J, Weber F, Lo J, et al. Strength measures are better than muscle mass measures in predicting health-related outcomes in older people: time to abandon the term sarcopenia? *Osteoporosis International* 2017;28(1):59-70. doi: 10.1007/s00198-016-3691-7
13. Fernandes LV, Paiva AEG, Silva ACB, et al. Prevalence of sarcopenia according to EWGSOP1 and EWGSOP2 in older adults and their associations with unfavorable health outcomes: a systematic review. *Aging Clinical and Experimental Research* 2022;34(3):505-14. doi: 10.1007/s40520-021-01951-7
14. Cruz-Jentoft AJ, Landi F, Schneider SM, et al. Prevalence of and interventions for sarcopenia in ageing adults: a systematic review. Report of the International Sarcopenia Initiative (EWGSOP and IWGS). *Age and ageing* 2014;43(6):748-59.
15. Cruz-Jentoft AJ, Baeyens JP, Bauer JM, et al. Sarcopenia: European consensus on definition and diagnosis: Report of the European Working Group on Sarcopenia in Older People. *Age and Ageing* 2010;39(4):412-23. doi: 10.1093/ageing/afq034
16. Harper S. Economic and social implications of aging societies. *Science* 2014;346(6209):587-91. doi: doi:10.1126/science.1254405
17. Pinedo-Villanueva R, Westbury LD, Syddall HE, et al. Health Care Costs Associated With Muscle Weakness: A UK Population-Based Estimate. *Calcified Tissue International* 2019;104(2):137-44. doi: 10.1007/s00223-018-0478-1
18. Beaudart C, Rizzoli R, Bruyère O, et al. Sarcopenia: burden and challenges for public health. *Arch Public Health* 2014;72(1):45-45. doi: 10.1186/2049-3258-72-45
19. Dionyssiotis Y, Kapsokoulou A, Samliidi E, et al. Sarcopenia: From definition to treatment. *Hormones* 2017;16(4):429-39.
20. Guthold R, Stevens GA, Riley LM, et al. Worldwide trends in insufficient physical activity from 2001 to 2016: a pooled analysis of 358 population-based surveys with 1.9 million participants. *The Lancet Global Health* 2018;6(10):e1077-e86. doi: [https://doi.org/10.1016/S2214-109X\(18\)30357-7](https://doi.org/10.1016/S2214-109X(18)30357-7)
21. Hallal PC, Andersen LB, Bull FC, et al. Global physical activity levels: surveillance progress, pitfalls, and prospects. *The Lancet* 2012;380(9838):247-57. doi: [https://doi.org/10.1016/S0140-6736\(12\)60646-1](https://doi.org/10.1016/S0140-6736(12)60646-1)
22. Beckwee D, Delaere A, Aelbrecht S, et al. Exercise Interventions for the Prevention and Treatment of Sarcopenia. A Systematic Umbrella Review. *Journal of Nutrition, Health and Aging* 2019;23(6):494-502.
23. Hurst C, Robinson SM, Witham MD, et al. Resistance exercise as a treatment for sarcopenia: prescription and delivery. *Age and ageing* 2022;51(2):afac003.

24. Fragala MS, Cadore EL, Dorgo S, et al. Resistance Training for Older Adults: Position Statement From the National Strength and Conditioning Association. *Journal of strength and conditioning research* 2019;33(8):2019-52.
25. Witham MD, Chawner M, Biase SD, et al. Content of exercise programmes targeting older people with sarcopenia or frailty - findings from a UK survey. *Journal of frailty, sarcopenia and falls* 2020;5(1):17-23. doi: 10.22540/JFSF-05-017
26. Ribeiro Santos V, Dias Correa B, De Souza Pereira CG, et al. Physical Activity Decreases the Risk of Sarcopenia and Sarcopenic Obesity in Older Adults with the Incidence of Clinical Factors: 24-Month Prospective Study. *Experimental aging research* 2020;46(2):166-77.
27. Yuan D, Jin H, Liu Q, et al. Publication Trends for Sarcopenia in the World: A 20-Year Bibliometric Analysis. *Frontiers in medicine* 2022;9:802651. doi: 10.3389/fmed.2022.802651
28. Suzan V, Suzan AA. A bibliometric analysis of sarcopenia: top 100 articles. *European Geriatric Medicine* 2021;12(1):185-91. doi: 10.1007/s41999-020-00395-y
29. Levinger I, Duque G. Sarcopenia: Innovation and Challenges. *Journal of the American Medical Directors Association* 2021;22(4):728-30.
30. Jamtvedt G, Lund H, Nortvedt MW. Kunnskapsbasert forskning? *Tidsskrift for Den norske legeforening* 2014 doi: 10.4045/tidsskr.13.1324
31. Moore SA, Hrisos N, Errington L, et al. Exercise as a treatment for sarcopenia: an umbrella review of systematic review evidence. *Physiotherapy (United Kingdom)* 2020;107:189-201.
32. Escriche-Escuder A, Fuentes-Abolafio IJ, Roldan-Jimenez C, et al. Effects of exercise on muscle mass, strength, and physical performance in older adults with sarcopenia: A systematic review and meta-analysis according to the EWGSOP criteria. *Experimental Gerontology* 2021;151 (no pagination)
33. Peters MDJ, Godfrey CM, Khalil H, et al. Guidance for conducting systematic scoping reviews. *Int J Evid Based Healthc* 2015;13(3):141-46. doi: 10.1097/XEB.0000000000000050
34. Arksey H, O'Malley L. Scoping studies: towards a methodological framework. *International Journal of Social Research Methodology* 2005;8(1):19-32. doi: 10.1080/1364557032000119616
35. Killam L. Research terminology simplified: Paradigms, axiology, ontology, epistemology and methodology: Laura Killam 2013.
36. Polit DF, Beck CT. Nursing research: generating and assessing evidence for nursing practice. 11 ed. Philadelphia: Lippincott Williams & Wilkins 2020.
37. PRISMA. PRISMA Extension for Scoping Reviews (PRISMA-ScR): Checklist and Explanation. *Annals of Internal Medicine* 2018;169(7):467-73. doi: 10.7326/m18-0850 %m 30178033

38. Haddaway NR, Collins AM, Coughlin D, et al. The Role of Google Scholar in Evidence Reviews and Its Applicability to Grey Literature Searching. *PLOS ONE* 2015;10(9):e0138237. doi: 10.1371/journal.pone.0138237
39. EndNote [program]. EndNote 20 version. Philadelphia, PA: Clarivate, 2013.
40. Ouzzani M, Hammady H, Fedorowicz Z, et al. Rayyan-a web and mobile app for systematic reviews. *Syst Rev* 2016;5(1):210. doi: 10.1186/s13643-016-0384-4 [published Online First: 20161205]
41. Cashin AG, McAuley JH. Clinimetrics: Physiotherapy Evidence Database (PEDro) Scale. *Journal of Physiotherapy* 2020;66(1):59. doi: <https://doi.org/10.1016/j.jphys.2019.08.005>
42. Almazán AA. Sarcopenia, Active Aging and Oral Microbiota. Effects of HIIT in Older Adults. U.S National Library of Medicine: University of Jaén, 2022.
43. Yen H-R. The Effect of Tai Chi Exercise Among Elders With Sarcopenia. <https://clinicaltrials.gov/show/NCT05145036>: China Medical University Hospital, 2021.
44. Dedeayne L, Dupont J, Koppo K, et al. Exercise and Nutrition for Healthy Ageing (ENHANce) project - effects and mechanisms of action of combined anabolic interventions to improve physical functioning in sarcopenic older adults: study protocol of a triple blinded, randomized controlled trial. *BMC geriatrics* 2020;20(1):532.
45. Sen EI, Eyigor S, Dikici Yagli M, et al. Effect of Home-Based Exercise Program on Physical Function and Balance in Older Adults With Sarcopenia: A Multicenter Randomized Controlled Study. *Journal of aging and physical activity* 2021:1-8.
46. Martins AC, Santos C, Silva C, et al. Does modified Otago Exercise Program improves balance in older people? A systematic review. *Preventive Medicine Reports* 2018;11:231-39. doi: <https://doi.org/10.1016/j.pmedr.2018.06.015>
47. Borg G. Perceived exertion as an indicator of somatic stress. *Scand J Rehabil Med* 1970;2(2):92-8. [published Online First: 1970/01/01]
48. Sathian B, Asim M, Banerjee I, et al. Impact of COVID-19 on clinical trials and clinical research: A systematic review. *Nepal J Epidemiol* 2020;10(3):878-87. doi: 10.3126/nje.v10i3.31622
49. Luy M, Gast K. Do Women Live Longer or Do Men Die Earlier? Reflections on the Causes of Sex Differences in Life Expectancy. *Gerontology* 2014;60(2):143-53. doi: 10.1159/000355310
50. Barford A, Dorling D, Smith GD, et al. Life expectancy: women now on top everywhere. *BMJ* 2006;332(7545):808. doi: 10.1136/bmj.332.7545.808
51. Miller GH, Gerstein DR. The life expectancy of nonsmoking men and women. *Public Health Rep* 1983;98(4):343-49.

52. Li J-B, Wu Y, Gu D, et al. Prevalence and temporal trends of presarcopenia metrics and related body composition measurements from the 1999 to 2006 NHANES. *BMJ Open* 2020;10(8):e034495. doi: 10.1136/bmjopen-2019-034495
53. von Haehling S, Morley JE, Anker SD. An overview of sarcopenia: facts and numbers on prevalence and clinical impact. *Journal of cachexia, sarcopenia and muscle* 2010;1(2):129-33. doi: 10.1007/s13539-010-0014-2 [published Online First: 2010/12/17]
54. Rydwick E, Frändin K, Akner G. Effects of physical training on physical performance in institutionalised elderly patients (70+) with multiple diagnoses. *Age and Ageing* 2004;33(1):13-23. doi: 10.1093/ageing/afh001
55. Calle MC, Fernandez ML. Effects of resistance training on the inflammatory response. *Nutr Res Pract* 2010;4(4):259-69.
56. Cao L, Morley JE. Sarcopenia Is Recognized as an Independent Condition by an International Classification of Disease, Tenth Revision, Clinical Modification (ICD-10-CM) Code. *J Am Med Dir Assoc* 2016;17(8):675-7. doi: 10.1016/j.jamda.2016.06.001
57. Chiu H-L, Yeh T-T, Lo Y-T, et al. The effects of the Otago Exercise Programme on actual and perceived balance in older adults: A meta-analysis. *PLOS ONE* 2021;16(8):e0255780. doi: 10.1371/journal.pone.0255780
58. Thomas S, Mackintosh S, Halbert J. Does the 'Otago exercise programme' reduce mortality and falls in older adults?: a systematic review and meta-analysis. *Age and Ageing* 2010;39(6):681-87. doi: 10.1093/ageing/afq102
59. Smith C, Woessner MN, Sim M, et al. Sarcopenia definition: Does it really matter? Implications for resistance training. *Ageing Research Reviews* 2022;78:101617. doi: <https://doi.org/10.1016/j.arr.2022.101617>
60. Goode AP, Hall KS, Batch BC, et al. The Impact of Interventions that Integrate Accelerometers on Physical Activity and Weight Loss: A Systematic Review. *Ann Behav Med* 2017;51(1):79-93. doi: 10.1007/s12160-016-9829-1
61. Connolly K, Cunningham C, Murphy N, et al. Prevalence of sarcopenia and associated factors in older adults attending a day hospital service in Ireland. *European Geriatric Medicine* 2021;12(4):851-62.

## APPENDIX 1: STRATEGY FOR CONDUCTING PRIMARY SEARCH

Below a set of screenshots from most of the searches are presented to ensure transparency and possibilities for replication. All searches had the same limitations set to five years back in time, i.e., 2017. Screenshots from PEDro were not obtained, but this search engine is simpler in procedure and was performed as a search of “sarcopenia”, with limitations set to 2017 and “strength training”.

The primary search was accomplished using the subsequent words for sarcopenia with Boolean operator “OR” in between each distinctive variants: “sarcopenia”, “presarcopenia”, “pre-sarcopenia”, “sarcopenic”, “pre-sarcopenic” and lastly “presarcopenic”.

Pairing up with these variations of sarcopenia, the words chosen for physical activity and exercise were “exercise”, “exercis\*”, “exercise therapy”, “physical activit\*”, “kines?therap\*” with OR as Boolean operator to find trials with exercise or physical activity as independent variables in a wide variety of written ways. Additionally (“strength\* OR resist\* OR weight\*”) paired with (“training OR exercise”) was added to ensure findings of these potent interventions.

### CINAHL



#	Query	Limiters/Expanders	Last Run Via
S1	(MH "Sarcopenia")	Expanders - Apply equivalent subjects Search modes - BooleanPhrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL
S2	TI ( sarcopenia or presarcopenia or pre-sarcopenia or sarcopenic or pre-sarcopenic or presarcopenic ) OR AB ( sarcopenia or presarcopenia or pre-sarcopenia or sarcopenic or pre-sarcopenic or presarcopenic )	Expanders - Apply equivalent subjects Search modes - BooleanPhrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL
S3	S1 OR S2	Expanders - Apply equivalent subjects Search modes - BooleanPhrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL
S4	(MH "Exercise*")	Expanders - Apply equivalent subjects Search modes - BooleanPhrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL
S5	(MH "Therapeutic Exercise*")	Expanders - Apply equivalent subjects Search modes - BooleanPhrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL
S6	TI ((( strength* or resist* or weight* ) N2 ( training or exercise* ) ) ) OR AB ( ( ( strength* or resist* or weight* ) N2 ( training or exercise* ) ) ) )	Expanders - Apply equivalent subjects Search modes - BooleanPhrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL
S7	TI exercis* OR AB exercis*	Expanders - Apply equivalent subjects Search modes - BooleanPhrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL
S8	TI "physical activit*" OR AB "physical activit**"	Expanders - Apply equivalent subjects Search modes - BooleanPhrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL
S9	TI kinesit#therap* OR AB kinesit#therap*	Expanders - Apply equivalent subjects Search modes - BooleanPhrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL
S10	S4 OR S5 OR S6 OR S7 OR S8 OR S9	Expanders - Apply equivalent subjects Search modes - BooleanPhrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL
S11	S3 AND S10	Expanders - Apply equivalent subjects Search modes - BooleanPhrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL



## Medline Ovid and EMBASE Ovid

### # ▲ Searches

1	Sarcopenia/
2	(sarcopenia or presarcopenia or pre-sarcopenia or sarcopenic or pre-sarcopenic or presarcopenic).tw.
3	1 or 2
4	exp Exercise/
5	exp Exercise Therapy/
6	((strength* or resist* or weight*) adj3 (training or exercise*)).tw.
7	exercis*.tw.
8	physical activit*.tw.
9	kinesi?therap*.tw.
10	or/4-9
11	3 and 10

The searches in both databases are identical

## Cochrane Library

-	+	#1	MeSH descriptor: [Sarcopenia] this term only	MeSH ▼
-	+	#2	<u>(sarcopenia or presarcopenia or pre-sarcopenia or sarcopenic or pre-sarcopenic or presarcopenic)</u> .ti,ab	Limits
-	+	#3	#1 OR #2	Limits
-	+	#4	MeSH descriptor: [Exercise] explode all trees	MeSH ▼
-	+	#5	MeSH descriptor: [Exercise Therapy] explode all trees	MeSH ▼
-	+	#6	((strength* or resist* or weight*) NEAR/3 (training or exercise*)).ti,ab	Limits
-	+	#7	<u>exercis*</u> .ti,ab	Limits
-	+	#8	physical NEXT <u>activit*</u> .ti,ab	Limits
-	+	#9	<u>kinesi?therap*</u> .ti,ab	Limits
-	+	#10	#4 OR #5 OR #6 OR #7 OR #8 OR #9	Limits
-	+	#11	#3 AND #10	Limits

## Epistemonikos

(title:(sarcopenia OR presarcopenia OR pre-sarcopenia OR sarcopenic OR presarcopenic) OR abstract:(sarcopenia OR presarcopenia OR pre-sarcopenia OR sarcopenic OR presarcopenic)) AND (title:((exercis\* OR training OR "physical activity" OR kinesiotherapy)) OR abstract:((exercis\* OR training OR "physical activity" OR kinesiotherapy))) AND (title:((strength\* OR resist\* OR weight\*)) OR abstract:((strength\* OR resist\* OR weight\*)))

AND	Title/Abstract	sarcopenia OR presarcopenia OR pre-sarcopenia OR sarcopenic OR presarcopenic	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
AND	Title/Abstract	(exercis* OR training OR "physical activity" OR kinesiotherapy)	
AND	Title/Abstract	(strength* OR resist* OR weight*)	

## APPENDIX 2: SCREENSHOTS OF GREY LITERATURE

Screenshots of the findings from the supplemental grey search in Google Scholar and US National Library of Medicine is shown in its entirety.

### Google Scholar

The localization and application in the SARC-F to assess sarcopenia in community-dwelling older adults and the effectiveness of exercise therapy on symptom ...

X Wang - Hebei Medical University, 2018

[Referanse](#) [Legg til etiketter](#) [Slett](#) [»](#)

Qualitative analysis of drivers and barriers to adhering to an exercise-protein intervention designed to counteract sarcopenia

AL Herrema, MJ Westerman, EJ van Dongen, U Kudla... - J. Aging Phys. Act, 2017

[Referanse](#) [Legg til etiketter](#) [Slett](#) [»](#)

Targeting inflammation and downstream protein metabolism in sarcopenia: a brief up-dated description of concurrent exercise and leucinebased multimodal ...

Z Xia, J Cholewa, Y Zhao, HY Shang, YQ Yang... - 2017

[Referanse](#) [Legg til etiketter](#) [Slett](#) [»](#)

A study on the influence of combined training of dance sports and resistance exercise on motor abilities and sarcopenia indicators in old women

HB Lee, YW Kim - The Journal of Korean Dance, 2017

[Referanse](#) [Legg til etiketter](#) [Slett](#) [»](#)

The impact of ageing, physical activity, and pre-frailty on skeletal muscle phenotype, mitochondrial content, and intramyocellular lipids in men. J Cachexia Sarcopenia ...

F St-Jean-Pelletier, CH Pion, JP Leduc-Gaudet... - 2017

[Referanse](#) [Legg til etiketter](#) [Slett](#) [»](#)

Utility of exercise practice as a fundamental mechanism to mitigate and/or modulate sarcopenia

A Cordova, S Bendicho... - ..., 2018 - INST INVESTIGACION CLINICA ...

[Referanse](#) [Legg til etiketter](#) [Slett](#) [»](#)

OBJECTIVELY MEASURED PHYSICAL ACTIVITY IN RELATION TO BODY COMPOSITION AND SARCOPENIA: FINDINGS FROM THE HERTFORDSHIRE ...

LD Westbury, HP Patel... - ..., 2018 - ... LONDON LTD 236 GRAYS INN RD ...

[Referanse](#) [Legg til etiketter](#) [Slett](#) [»](#)

Leisure-time physical activity at moderate and high intensity is associated with parameters of body composition, muscle strength and sarcopenia in aged adults with ...

O Vidal, H Schröder, NE Babio Sánchez, R Estruch... - ..., 2018, vol. 38 (3), núm. 3, p ..., 2018

[Referanse](#) [Legg til etiketter](#) [Slett](#) [»](#)

Intervention for Sarcopenia Among Older Chinese Adults: A Randomized Controlled Trial Assessing the Role of Exercise Program and Nutrition Supplement

L Zhu - 2018

[Referanse](#) [Legg til etiketter](#) [Slett](#) [»](#)

EFFECTS OF EXERCISE ON QUALITY OF LIFE AND MOOD IN ELDERLY WITH SARCOPENIA: A RANDOMIZED CONTROLLED TRIAL

M Tsekoura, E Billis, E Tsepis... - ..., 2019 - ... LONDON LTD 236 GRAYS INN RD ...

[Referanse](#) [Legg til etiketter](#) [Slett](#) [»](#)



1 2 3 4 5 6 7 8 9 10 **Neste**

Efficacy of Branched-Chain Amino Acid Supplementation and Walking Exercise for Preventing Sarcopenia in Patients with Liver Cirrhosis

A Hiraoka, M Hirooka, M Abe... - ..., 2018 - ... ST, HOBOKEN 07030-5774, NJ USA

Referanse Legg til etiketter Slett

HOME BASED RESISTANCE EXERCISE PROGRAM AND SARCOPENIA IN HEMODIALYSIS PATIENTS: IT IS A USEFUL INTERVENTION?

V Esteve Simo... - ..., 2020 - OXFORD UNIV PRESS GREAT ...

Referanse Legg til etiketter Slett

ADDITION OF TESTOSTERONE THERAPY TO NUTRITION AND STRUCTURED EXERCISE IS SUPERIOR TO NUTRITION AND STRUCTURED EXERCISE ALONE ...

S Singh, AK Choudhury, J Benjamin... - ..., 2020 - ... ST, HOBOKEN 07030-5774, NJ USA

Referanse Legg til etiketter Slett

The Molecular Mechanisms of Exercise on Skeletal Muscular Water and Prevention of Postmenopausal Sarcopenia

YL HUNG, M ISHIDO, S MACHIDA - デザントスポーツ科学, 2020 - jglobal.jst.go.jp

Publisher site ({{this.onShowPLink (" テキストリンク | 文献 EN | PC "," 出版者サイト "," http://www.descente.co.jp/shimoto/zdtop.html "," L0988AA")}} Copy service ({{this.onShowCLink (" ...

Referanse Legg til etiketter Slett

Clinical and Basic Investigations on the Serum Adropin as a Surrogate Marker for Age-Related Exercise Intolerance and Sarcopenia

A FUKUSHIMA, S KINUGAWA, T YOKOTA... - デザントスポーツ ..., 2018 - jglobal.jst.go.jp

Clinical and Basic Investigations on the Serum Adropin as a Surrogate Marker for Age-Related Exercise Intolerance and Sarcopenia | Article Information | J-GLOBAL Art J-GLOBAL ID:201802270887300582 ...

Referanse Legg til etiketter Slett

S-476: The relationship between physical activity and sarcopenia in patients with chronic kidney disease

송재희, 송영림 - 대한내과학회 추계학술발표논문집, 2020 - papersearch.net

S-476 : The relationship between physical activity and sarcopenia in patients with chronic kidney disease < 논문상세 < 페이지서치 클로버메뉴 바로가기 본문 바로가기 하단메뉴 바로가기 ...

Referanse Legg til etiketter Slett

Impact of mid-life onset of resistance exercise on age-related morphological and molecular changes in sciatic nerves, associated with sarcopenia, in old male and ...

V Krishnan, Z White, J Terrill, S Hodgetts... - Experimental ..., 2017 - espace.curtin.edu.au

Curtin University would like to pay our respect to the indigenous members of our community by acknowledging the traditional owners of the land on which the Perth Campus is located ...

Referanse Legg til etiketter Slett

NUTRITION AND PHYSICAL ACTIVITY IN THE PREVENTION AND TREATMENT OF SARCOPENIA: OUTCOMES OF THE IOF-ESCEO SARCOPENIA WORKING ...

NC Harvey - OSTEOPOROSIS INTERNATIONAL, 2018 - ... LONDON LTD 236 GRAYS INN RD ...

Referanse Legg til etiketter Slett

Assessment of Nutrition Status and Physical Activity towards Sarcopenia among Independently Living Elderly in Pangkalpinang City

Ratmawati, A Devriany - ANNALS OF ..., 2019 - ... ALLSCHWILERSTRASSE 10, CH ...

Referanse Legg til etiketter Slett

DIET AND EXERCISE TO TREAT SARCOPENIA

J Bauer - OSTEOPOROSIS INTERNATIONAL, 2019 - ... LONDON LTD 236 GRAYS INN RD ...

Referanse Legg til etiketter Slett



Forrige 1 2 3 4 5 6 7 8 9 10 Neste

Long-Term Endurance Exercise Training from Middle Age Attenuates Risk of Sarcopenia and Frailty

김중희 - 제 99 회 전국체육대회기념 제 56 회 한국체육학회 ..., 2018 - scholarworks.bwise.kr  
ScholarWorks@Hanyang University: Long-Term Endurance Exercise Training from Middle Age Attenuates Risk of Sarcopenia and Frailty ScholarWorks@Hanyang University ...  
Referanse Legg til etiketter Slett

Diet and exercise are not associated with skeletal muscle mass and sarcopenia in patients with bladder cancer

WP Tan, Y Wang, A Chang... - ..., 2019 - ... ST, HOBOKEN 07030-5774, NJ USA  
Referanse Legg til etiketter Slett

Associations of sarcopenia and its components with self-reported health-related quality of life, physical activity, and nutrition in older adults performing exercise ...

E Akehurst, D Scott... - ..., 2020 - ... ST, HOBOKEN 07030-5774, NJ USA  
Referanse Legg til etiketter Slett

Sarcopenia: Nutritional needs and physical activity

E Reijnen - AUSTRALASIAN JOURNAL ON AGEING, 2017 - research.vumc.nl  
Sarcopenia: Nutritional needs and physical activity — Amsterdam UMC - Vrije Universiteit  
Amsterdam Skip to main navigation Skip to search Skip to main content Amsterdam UMC - Vrije ...  
Referanse Legg til etiketter Slett

Effect of Long-Term Exercise in the Middle Age on Sarcopenia and Frailty: The Role of Ubiquitin-Proteasome Regulation in Mice Skeletal Muscles

김중희 - 5th Asian Conference for Frailty and Sarcopenia, 2019 - scholarworks.bwise.kr  
ScholarWorks@Hanyang University: Effect of Long-Term Exercise in the Middle Age on Sarcopenia and Frailty: The Role of Ubiquitin-Proteasome Regulation in Mice Skeletal ...  
Referanse Legg til etiketter Slett

Prevalence, consequences and effects of exercise on sarcopenia in aged care

J Keogh, T Henwood, H Senior... - ..., Journal On Ageing, 2017 - espace.library.uq.edu.au  
Referanse Legg til etiketter Slett

The association between sarcopenia and decorin, an exercise-induced myokine, in patients with liver cirrhosis: a pilot study

戸次将史 - 2019 - ci.nii.ac.jp  
Cinii 博士論文 - The association between sarcopenia and decorin, an exercise-induced myokine, in patients with liver cirrhosis: a pilot study Cinii 国立情報学研究所 学術情報ナビゲータ ...  
Referanse Legg til etiketter Slett

Role of Autophagy and Exercise Intervention in Sarcopenia

Y Kim, S Lee, W Lee - 대한운동사협회 운동사대회자료집, 2019 - papersearch.net  
Role of Autophagy and Exercise Intervention in Sarcopenia < 논문상세 > 페이퍼서치 클로버  
메뉴 바로가기 본문 바로가기 하단메뉴 바로가기 ★ 즐겨찾기 로그인회원가입 구매논문 장바구니 ...  
Referanse Legg til etiketter Slett

Deficits in muscle strength and muscle quality influence physical activity in pediatric liver transplant recipients with sarcopenia

PH Ooi, VC Mazurak, K Siminoski, R Bhargava... - Liver Transpl, 2020  
Referanse Legg til etiketter Slett

A meta-analysis on the effect size of physical activity, nutrition and health education-related intervention for sarcopenia in the elderly

HJ Lee, AJ Kim - KJGSW, 2020  
Referanse Legg til etiketter Slett



The association between sarcopenia and decorin, an exercise-induced myokine, in patients with chronic liver disease  
M Bekki, R Hashida, T Kawaguchi, N Goshima... - JCSM Rapid ..., 2018  
99 Referanse [Legg til etiketter](#) [Slett](#) [»](#)

Effects of 15-week complex exercise program of sarcopenia elderly women on body composition, IGF-1 and hip muscle strength  
JY Park, YJ Song - Korean J. Sport, 2020  
99 Referanse [Legg til etiketter](#) [Slett](#) [»](#)

Effects of the Elastic Band Exercise Program Using the Self-Efficacy Enhancement Strategy on Sarcopenia and Quality of Life in Hemodialysis Patients  
SM Cha, HS Min - 한국간호과학회 학술대회, 2019 - dbpia.co.kr  
Aims: This study is to verify the effects of elastic band exercise using self-efficacy strategies on sarcopenia and the quality of life in hemodialysis patients. Methods: A nonequivalent ...  
99 Referanse [Legg til etiketter](#) [Slett](#) [»](#)

Associations of objectively determined sedentary behaviour and physical activity with sarcopenia and incident falls over 12 months in community-dwelling Swedish ...  
D Scott, J Johansson, A Gandham... - ... Journal on Ageing, 2020 - diva-portal.org  
99 Referanse [Legg til etiketter](#) [Slett](#) [»](#)

Effects of combined exercise and GABA intake on sarcopenia and locomotive syndrome in middle-aged women  
W Choi - 대한운동사협회 운동사대회자료집, 2018 - papersearch.net  
Effects of combined Exercise and GABA intake on Sarcopenia and Locomotive Syndrome in Middle-aged Women < 논문상세 > [페이퍼서치](#) [글로벌메뉴](#) [바로가기](#) [본문](#) [바로가기](#) [하단메뉴](#) ...  
99 Referanse [Legg til etiketter](#) [Slett](#) [»](#)

Biochemical pathways of sarcopenia and their modulation by physical exercise: A narrative review. Frontiers in Medicine, 4 (OCT)  
MM Ziaaldini, E Marzetti, A Picca, Z Murlasits - 2017  
99 Referanse [Legg til etiketter](#) [Slett](#) [»](#)

Biochemical pathways of sarcopenia and their modulation by physical exercise: A narrative review. Front Med, 4, 167  
MM Ziaaldini, E Marzetti, A Picca - 2017  
99 Referanse [Legg til etiketter](#) [Slett](#) [»](#)

Understanding Cachexia, Sarcopenia, and Physical Exercise in Patients with Cancer  
DJ Jeanmonod, SK Rebecca - Intech open, 2018  
99 Referanse [Legg til etiketter](#) [Slett](#) [»](#)

Bohannon R w, Sontakova L, Tufano JJ, Shiells K, Holmerova I. Relationship between sarcopenia and physical activity in older people: a systematic review and meta ...  
M Steffl - Clin Interv Aging, 2017  
99 Referanse [Legg til etiketter](#) [Slett](#) [»](#)

European Society of Geriatric Medicine Special Interest Group in Systematic Reviews and Meta-Analyses, Frailty, Sarcopenia, and Dementia. Physical activity and ...  
J Demurtas, D Schoene, G Torbahn, A Marengoni... - J Am Med Dir Assoc, 2020  
99 Referanse [Legg til etiketter](#) [Slett](#) [»](#)



Canadian Spine Society Abstracts Experiences in implementing the EOS radiographic system and SterEOS three-dimensional module Risk factors for surgical site ...

D Hill, H Abdullah, A Peiro-Garcia, J Dermott... - 2018 - canjsurg.ca

Background: The American Academy of Orthopaedic Surgeons, Scoliosis Research Society, Pediatric Orthopaedic Society of North America and American Academy of Pediatrics ...

Referanse Legg til etiketter Slett

[PDF] canjsurg.ca  
Free from Publisher

Metabolic and IL-6-Induced Inflammatory Responses in High-Intensity Intermittent Exercise among Type 2 Diabetes Patients with Sarcopenia

Z Liu - Open Access Library Journal, 2018 - scirp.org

Objective: The aim of this study was to examine the effects of high-intensity intermittent exercise (HIIE) on features of immunometabolism by comparing elderly female sarcopenia ...

Referanse Legg til etiketter Slett

[HTML] scirp.org

Fitness, Life Enhancement, and Exercise in Liver Transplantation Consortium. A multicenter study to define sarcopenia in patients with end-stage liver disease

EJ Carey, JC Lai, CW Wang, S Dasarathy, I Lobach... - Liver Transpl, 2017

Referanse Legg til etiketter Slett

Effects of the Home-based Older People's Exercise (HOPE) protocol on body composition and functional capacity of older Brazilians with sarcopenia: a randomized ...

HA Pinheiro, VR Cerceau, LC Pereira... - International Journal ..., 2021 - researchgate.net

The aging process causes various physiological changes primarily associated with change in body composition (reduction of lean mass and increased amount of body fat) which can ...

Referanse Legg til etiketter Slett

[PDF] researchgate.net

Role of the nervous system in sarcopenia: age related molecular and morphological changes in murine peripheral nerves and spinal cords, and analysis of the effects ...

V Nambiar - 2017 - research-repository.uwa.edu.au

This PhD research studied the role of the peripheral and central nervous system, in the context of the age related loss of skeletal muscle mass and function (sarcopenia). A time ...

Referanse Legg til etiketter Slett

Combination of Ubiquinol intake and moderate physical activity efficiently counteracts myocytes mitochondrial dysfunctions and apoptosis in a mouse model of ...

S Silvestri, P Orlando, C Andreani, C Bartolacci... - Free Radical Biology ..., 2017 - Elsevier

Sarcopenia is a age-related condition characterized by loss of muscle mass and strength with important societal implication in light of the growing elderly population. Mitochondrial ...

Referanse Legg til etiketter Slett

Exercise Capacity Is Improved by Levosimendan in Heart Failure and Sarcopenia via Alleviation of Apoptosis of Skeletal Muscle

D Wang, M Song, L Shen, L Han, P Zhu, X Jia... - Frontiers in ..., 2022 - frontiersin.org

Background Patients suffering from chronic heart failure (CHF) show an increased prevalence of sarcopenia. Levosimendan is an effective drug for the treatment of heart ...

Referanse Legg til etiketter Slett

[HTML] frontiersin.org

Effectiveness of a combined exercise and nutrition program to improve sarcopenia in the frail elderly and the association of leg strength with sarcopenia, disability and ...

L Wanders - 2017 - fse.studenttheses.ub.rug.nl

Effectiveness of a combined exercise and nutrition program to improve sarcopenia in the frail elderly and the association of leg strength with sarcopenia, disability and quality of life - Student ...

Referanse Legg til etiketter Slett

Erratum to: Voluntary resistance wheel exercise from mid-life prevents sarcopenia and increases markers of mitochondrial function and autophagy in muscles of old ...

Z White, J Terrill, RB White... - Skeletal ..., 2017 - skeletalmusclejournal.biomedcentral.com

Following publication of the original article [1] it was brought to our attention that there was a problem with the merging of the lines in Figs. 6 and 7. These figures show western blot ...

Referanse Legg til etiketter Slett

[HTML] biomedcentral.com

Physical Activity in Prevention of Glucocorticoid Myopathy and Sarcopenia in Aging

T Seene, P Kaasik - Aging: Exploring a Complex Phenomenon, 2017 - taylorfrancis.com

Aging is a multifactorial process leading to changes in skeletal muscle quantity and quality, which cause muscle weakness and disability in the aging population. Muscle weakness in ...

Referanse Legg til etiketter Slett



Forrige 1 2 3 4 5 6 7 8 9 10 Neste

Effect of a simple and adherent home exercise program on the physical function of community dwelling adults sixty years of age and older with pre-sarcopenia or ...

丸谷康平, マルヤ, ヨウヘイ - 2017 - ci.nii.ac.jp

CiNii 博士論文 - Effect of a simple and adherent home exercise program on the physical function of community dwelling adults sixty years of age and older with pre-sarcopenia or sarcopenia ...

🔍 Referanse 🗑️ Legg til etiketter 🗑️ Slett 🔗

Association between nutrient intake, physical activity and sarcopenia-related gene-promoter DNA methylation

L He, P Khanal, C Morse - ..., Date: 2019/02/20-2019/02 ..., 2019 - liris.kuleuven.be

Background DNA methylation in gene-promoter regions is usually related to repressed gene expressions. DNA methylation can be affected by environmental factors such as diet and ...

🔍 Referanse 🗑️ Legg til etiketter 🗑️ Slett 🔗

Effect of interventions with exercise and/or supplementation on muscle mass of elderly people with sarcopenia: a meta-analysis

W Solano García, P Carazo Vargas - ..., Revista de ciencias del ejercicio y ..., 2019 - scielo.sa.cr

Abstract SOLANO GARCIA, Wilson and CARAZO VARGAS, Pedro. Effect of interventions with exercise and/or supplementation on muscle mass of elderly people with sarcopenia: a ...

🔍 Referanse 🗑️ Legg til etiketter 🗑️ Slett 🔗

Analysis on the Hotspot and Content of Exercise Therapy for the Treatment of Sarcopenia in Foreign Countries—Based on Visualization Research of Scientific ...

W JIANG, X WANG, Z JIANG - China Sport Science, 2017

🔍 Referanse 🗑️ Legg til etiketter 🗑️ Slett 🔗

The effect of mechanical assisted squat exercise on pulmonary function, muscle mass and function with or without sarcopenia

YK Jeon, MJ Shin, IJ Kim, BH Kim - Endocrine ..., 2017 - endocrine-abstracts.org

Methods: Participants were recruited via posters or the websites of regional health centers.

In total, 76 community-dwelling elderly subjects (aged> 60 years) were screened. We finally ...

🔍 Referanse 🗑️ Legg til etiketter 🗑️ Slett 🔗

Effect of exercise intervention for patients with frailty and sarcopenia: From bench to bedside

J Lim - 한국장기요양학회 추계학술대회자료집, 2018 - papersearch.net

Frailty and Sarcopenia have risen to become the new geriatric giants having very high rates of functional deterioration, hospitalization and death. Recent studies have focused on ...

🔍 Referanse 🗑️ Legg til etiketter 🗑️ Slett 🔗

EXERCISE AND NUTRITION INTERVENTIONS FOR THE TREATMENT OF SARCOPENIA: INFLUENCE OF OBESITY

A Hayes, D Scott, S Dorgo - Innovation in Aging, 2017 - ncbi.nlm.nih.gov

Sarcopenia, the loss of muscle mass and function with aging, is gaining further clinical recognition with an ICD-10-CM code now in place. Obesity complicates sarcopenia, with ...

🔍 Referanse 🗑️ Legg til etiketter 🗑️ Slett 🔗

PREVENTING SARCOPENIA: OPTIMIZING FUNCTION AND PHYSICAL ACTIVITY USING FUNCTION-FOCUSED CARE

B Resnick, E Galik - Innovation in Aging, 2017 - ncbi.nlm.nih.gov

Sarcopenia is the age-associated loss of skeletal muscle mass and function. The loss of skeletal muscle mass associated with sarcopenia results in a loss of strength, rate of force ...

🔍 Referanse 🗑️ Legg til etiketter 🗑️ Slett 🔗

Does a 6-week supervised exercise programme for Parkinson's patients prevent against sarcopenia and improve physical function? A service evaluation

W Caffrey, R Stevens - Physiotherapy, 2021 - physiotherapyjournal.com

Purpose: It has been highly documented that sarcopenia is a common condition throughout the aging population. Defined as a loss of muscle mass and strength with modifiable risk ...

🔍 Referanse 🗑️ Legg til etiketter 🗑️ Slett 🔗

Mechanism of SIRT1-mediated Energy Deprivation (Calorie Restriction and Exercise) Against Sarcopenia

W Jinyue - francis-and-taylor.com

BACKGROUND: Sarcopenia is a symptom of muscle aging characterized by mass loss and strength loss. The disorder is the leading cause of fall incapacity/death in the elderly and the ...

🔍 Referanse 🗑️ Legg til etiketter 🗑️ Slett 🔗

[PDF] francis-and-taylor.com



### Long-Term Endurance Exercise Training from Middle Age Attenuates Risk of Sarcopenia and Frailty

JB Huh, JH Kim - 88 서울올림픽기념 국제스포츠과학학회, 2018 - dbpia.co.kr

Purpose: The primary goal of this study is to establish the criterion cutoffs of sarcopenia and frailty in the C57BL/6N mouse model. The secondary goal is to determine whether long-term ...

99 Referanse [Legg til etiketter](#) [Slett](#) [»](#)

### Exercise Interventions for the Prevention and Treatment of Sarcopenia. A Systematic Umbrella Review Beckwee, D.; Delaere, A.; Aelbrecht, S.; Baert, V.; Beaudart, C.; ...

[PDF] vub.be

D Beckwee - researchportal.vub.be

Objectives The aim of this systematic review is to provide an overview of the efficacy of different exercise interventions to counter sarcopenia in older adults. This review will allow ...

99 Referanse [Legg til etiketter](#) [Slett](#) [»](#)

### ASSOCIATION BETWEEN SARCOPENIA WITH NUTRITION AND EXERCISE IN COMMUNITY-DWELLING OLDER CHINESE

[PDF] oup.com

S Hai, L Cao, H Wang, J Zhou, P Liu... - Innovation in Aging, 2017 - academic.oup.com

Sarcopenia is the age-related decline in skeletal muscle mass and function, which may result in falls and fractures, poor quality of life, and increased risk of death in older people ...

99 Referanse [Legg til etiketter](#) [Slett](#) [»](#)

### THE RELATIONSHIP BETWEEN BONE AND MUSCLE: EFFECT OF EXERCISE ON OSTEOPOROSIS AND SARCOPENIA

E Lam - 2020 - keep.lib.asu.edu

Osteosarcopenia is a newly formed term that combines the symptoms of osteoporosis and sarcopenia together because of their concurrent appearances in life. They are both age ...

99 Referanse [Legg til etiketter](#) [Slett](#) [»](#)

### Nursing research of nutrition and exercise intervention on patients with COPD and Sarcopenia

XALJ - Parenteral & Enteral Nutrition, 2017 - wprim.whocc.org.cn

Sarcopenia is the syndrome that occurs in the process of aging, manifesting as the progressive and extensive loss in skeletal muscle mass, muscle strength and function ...

99 Referanse [Legg til etiketter](#) [Slett](#) [»](#)

### THU0568 EFFECTIVENESS OF FOOT ORTHOSIS TO PROMOTE PHYSICAL ACTIVITY FOR PATIENTS WITH CONCURRENT RHEUMATOID ARTHRITIS AND ...

[PDF] bmj.com

N Hishikawa, S Toyama, S Ohashi, K Sawada, K Ikoma... - 2020 - ard.bmj.com

Background: Sarcopenia is a progressive systemic skeletal muscle disorder associated with an increased likelihood of adverse outcomes including physical disability, falls, and ...

99 Referanse [Legg til etiketter](#) [Slett](#) [»](#)

### Sarcopenia in Chronic Kidney Disease and the Effectiveness of Physical Activity

[PDF] sciencevolks.com

SRB de Azevedo, J da Costa Matos, BB Batista - sciencevolks.com

Chronic kidney disease is a problem of enormous relevance and recognized as a complex disease, requiring multiple approaches to its treatment. A high percentage of sarcopenia in ...

99 Referanse [Legg til etiketter](#) [Slett](#) [»](#)

### Understanding Cachexia, Sarcopenia, and Physical Exercise in Patients with Cancer

[HTML] intechopen.com

S Morishita, A Tsubaki, JB Fu - Frailty and Sarcopenia-Onset ..., 2017 - books.google.com

Many patients with cancer experience muscle wasting and weakness. Muscle wasting in patients with cancer can be caused by cachexia and sarcopenia. Both cachexia and ...

99 Referanse [Legg til etiketter](#) [Slett](#) [»](#)

### Sarcopenia and PRAISED-2 Intervention's Impact on Diet, Physical Activity, and Body Composition

[HTML] proquest.com

M Hammersla - 2017 - search.proquest.com

Background: Older adults with a low socioeconomic status and African Americans are more sedentary than the general population. This contributes to the development of sarcopenia ...

99 Referanse [Legg til etiketter](#) [Slett](#) [»](#)

### Exercise and Sarcopenia in Cirrhosis

[PDF] researchgate.net

J Soldera, A Rech, D Rossi - researchgate.net

Exercise and Sarcopenia in Cirrhosis Page 1 Gastro Med Res Copyright © Jonathan Soldera Volume 2 - Issue - 2 Editorial Cirrhosis is the end stage of every chronic liver disease, which ...

99 Referanse [Legg til etiketter](#) [Slett](#) [»](#)





Development and evaluation of a program for the treatment of sarcopenia in community-dwelling older adults. The Exercise and Nutrition for Healthy Ageing ...

L Dedebye - 2020 - liras.kuleuven.be

Exercise and nutritional intervention to prevent frailty and sarcopenia in elderly Because of the ageing of the population, sarcopenia (age-related decline in muscle mass and muscle ...

Referanse Legg til etiketter Slett

Impact of sarcopenia on muscle strength and exercise capacity in elderly patients with chronic heart failure

X XIAO, S HU, T ZHAO, J LIU, N AN... - Chinese Journal of ..., 2019 - pesquisa.bvsalud.org

Objective To investigate the impact of sarcopenia on muscle strength and exercise capacity in elderly patients with chronic heart failure (CHF). Methods One hundred and sixteen ...

Referanse Legg til etiketter Slett

Development and Effect of Home-Based Exercise Program for Prevention of Sarcopenia in Hemiplegic Patients

C Gyo Yeong, H Myung Nam - 한국간호과학회 학술대회, 2021 - dbpia.co.kr

Aim (s): The purpose of this study was to develop and verify the effectiveness of the home-based exercise program for prevention of sarcopenia in hemiplegic patients. Method (s): The ...

Referanse Legg til etiketter Slett

Visualization analysis on research progress and hotspots of exercise therapy for sarcopenia in older adults in recent decade

[PDF] cjtcr.com

S Wang, L Li, Y Zhang - Chinese Journal of Tissue Engineering Research, 2022 - cjtcr.com

BACKGROUND: In addition to reducing personal quality of life, sarcopenia will also have a medical burden to the society. In view of the risk factors causing sarcopenia, corresponding ...

Referanse Legg til etiketter Slett

Effects of the Proprioceptive Neuromuscular Facilitation Patterns Exercise and Protein Intake on Balance, Gait, and Lower Extremity Muscular Strength for Sarcopenia ...

[PDF] koreascience.or.kr

JC Park, DK Lee - PNF and Movement, 2021 - koreascience.or.kr

Purpose: The study examined the effects of the proprioceptive neuromuscular facilitation pattern exercise and protein intake on balance, gait ability, and lower extremity muscular ...

Referanse Legg til etiketter Slett

Comments on: "The Role of Muscle Mass Gain Following Protein Supplementation Plus Exercise Therapy in Older Adults with Sarcopenia and Frailty Risks: A ...

[PDF] proquest.com

C Wei-Ting, KCW Chu, CH Bai, YP Hsu - Nutrients, 2019 - search.proquest.com

the authors intended to determine whether LBM gain was associated with muscle strength and physical mobility by using meta-regression analyses. When these studies are excluded ...

Referanse Legg til etiketter Slett

The exercise intervention may influence the dietary intake and reduce the risk of osteoporosis and sarcopenia in menopausal women

P Yang, C Chen, HY Chiou, YL Li... - The FASEB ..., 2017 - Wiley Online Library

Middle-aged and elderly people usually have certain aspects of physical deterioration, such as muscle and bone losses which lead to fall easily, and increased the risk of fractures ...

Referanse Legg til etiketter Slett

Association Among Physical Activity, Protein, Intake and Clinical Indicators of Sarcopenia

[HTML] proquest.com

CP Kemper - 2020 - search.proquest.com

Sarcopenia, the age-related loss of skeletal muscle mass and function is associated with risk of falls/fractures and mortality. Physical inactivity and inadequate protein intake are lifestyle ...

Referanse Legg til etiketter Slett

EXERCISE, PROTEIN, AND ELECTRIC STIMULATION REDUCES ICU ASSOCIATED SARCOPENIA IN OLDER PATIENTS

[PDF] oup.com

Full View

AC Verceles, MC Serra, C Wells, D Davis... - Innovation in ..., 2017 - academic.oup.com

Background: Older, critically ill patients receiving mechanical ventilation (MV) are more susceptible to ICU-related sarcopenia due to undernutrition, preexisting comorbidities, and ...

Referanse Legg til etiketter Slett

The Association of Dietary Factors and Physical Activity with Sarcopenia in Non-alcoholic Fatty Liver Disease (NAFLD)

[PDF] postersessiononline.eu

JM Paik, KW Kabbara, E Eberly, M Harring, JP Ong... - Age, 2021 - postersessiononline.eu

The Association of Dietary Factors and Physical Activity with Sarcopenia in Non-alcoholic Fatty Liver Disease (NAFLD) Page 1 ILC2021 Scan to download the poster Disclosure Information ...

Referanse Legg til etiketter Slett



Forrige 3 4 5 6 7 8 9 10 11 12 Neste

Relationship Between Sarcopenia, Obesity, Osteoporosis, and Cardiometabolic Health Conditions and Physical Activity Levels in Korean Older Adults

[HY Park](#), [WS Jung](#), [SW Kim](#), [K Lim](#) - *Frontiers in Physiology*, 2021 - [frontiersin.org](#)

This study aimed to analyze the status of sarcopenia, obesity, osteoporosis, and cardiometabolic disease according to the level of physical activity (PA) among elderly ...

[Referanse](#) [Legg til etiketter](#) [Slett](#)

[HTML] [frontiersin.org](#)

Physical activity improves sarcopenia in a murine model by enhancing the proliferative potential of muscle stem cells, oxidative capacity of mitochondrial enzymes and ...

[M Anwar](#), [SR Mallick](#), [D Paliwal](#), [S Sekhar](#), [SK Panda](#)... - *bioRxiv*, 2019 - [biorxiv.org](#)

Sarcopenia is a major health issue in old age. Underlying molecular mechanisms in its genesis remain unclear and optimal animal models are yet to be established. A novel ...

[Referanse](#) [Legg til etiketter](#) [Slett](#)

[PDF] [biorxiv.org](#)  
Free from Publisher

Associations Among Physical Activity, Protein Intake, and Clinical Indicators Of Sarcopenia: 1508 Board# 102 May 28 9: 30 AM-11: 00 AM

[CP Kemper](#), [DJ Canter](#), [BN Miller](#), [KO Newton](#)... - *Medicine & Science in ...*, 2020 - *LWW*

[Referanse](#) [Legg til etiketter](#) [Slett](#)

Association of Physical Activity to Sarcopenia, Liver Fibrosis, and Cardiovascular Disease: Need a Closer Look!

[A Jindal](#), [RK Jagdish](#) - *Clinical Gastroenterology and Hepatology*, 2022 - [cghjournal.org](#)

We read with interest the retrospective study by Chun et al 1 showing the association of physical activity grade and intensity with risk of liver fibrosis, sarcopenia, and cardiovascular ...

[Referanse](#) [Legg til etiketter](#) [Slett](#)

The Relationship Between Physical Activity and the Presence of Sarcopenia in Older Adults: A Taiwanese Cross-sectional Study

[YC Ko](#), [WC Chie](#), [TY Wu](#), [CY Ho](#), [WR Yu](#) - 2021 - [researchsquare.com](#)

To the best of our knowledge, none of Taiwanese studies on the relationship between physical activity (PA) and sarcopenia by the latest 2019 Asian Working Group for ...

[Referanse](#) [Legg til etiketter](#) [Slett](#)

[PDF] [researchsquare.com](#)

Impact of exercise training on sarcopenia associated with non-alcoholic fatty liver disease (NAFLD) in humans: A systematic review and meta-analysis

[A Gonzalez](#), [M Valero-Breton](#), [C Huerta-Salgado](#)... - *medRxiv*, 2020 - [medrxiv.org](#)

Objective To conduct a systematic review and meta-analyses to assess the efficacy of physical exercise on strength, muscle mass and physical function in adult patients with non ...

[Referanse](#) [Legg til etiketter](#) [Slett](#)

[PDF] [medrxiv.org](#)

Exercise Capacity is Improved by Levosimendan in Heart Failure and Sarcopenia Mice via the Alleviation of Atrophy and Apoptosis of Skeletal Muscle

[D Wang](#), [M Song](#), [L Shen](#), [L Han](#), [P Zhu](#), [X Jia](#)... - 2021 - [researchsquare.com](#)

Background Sarcopenia, a common complication of heart failure (HF), dramatically reduces the benefits of exercise training. Levosimendan is an effective drug for the treatment of heart ...

[Referanse](#) [Legg til etiketter](#) [Slett](#)

[PDF] [researchsquare.com](#)

Vascular aging and sarcopenia: Interactions with physiological functions during exercise

[N Hayashi](#) - *Sarcopenia*, 2021 - *Elsevier*

Sarcopenia includes reductions in the skeletal muscle mass, which could be related to the circulatory responses to exercise that support the degree of exertion associated with ...

[Referanse](#) [Legg til etiketter](#) [Slett](#)

Causes of age-related sarcopenia and frailty: the role of exercise and nutrition for prevention

[YH Byun](#), [WY Park](#) - *Journal of the Korean Applied Science and ...*, 2020 - [koreascience.or.kr](#)

The purpose of this study is not only to define and cause of sarcopenia and frailty due to aging, but also to explore prevention and delay through regular exercise and right nutrition ...

[Referanse](#) [Legg til etiketter](#) [Slett](#)

[PDF] [koreascience.or.kr](#)

Aging-induced Sarcopenia and Exercise.

[JW Heo](#), [MH No](#), [DH Min](#)... - *Official Journal of ...*, 2017 - *Korean Academy of Kinesiology*

[Referanse](#) [Legg til etiketter](#) [Slett](#)



### Trends of sarcopenia and physical activity in elderly Koreans using KNHANES 2007-2017

HS Ahn, BW Kim, Y Park, M KG - European Journal of Public Health, 2019 - academic.oup.com  
Background Sarcopenia is one of risk factors for prevalence of chronic diseases which is associated with aging. Distribution of sarcopenia in Korea is important because Korea is one ...  
Referanse Legg til etiketter Slett

### P0960 HOME BASED RESISTANCE EXERCISE PROGRAM AND SARCOPENIA IN HEMODIALYSIS PATIENTS: IT IS A USEFUL INTERVENTION?

V Esteve Simó, A Junqué Jiménez... - Nephrology Dialysis, 2020 - academic.oup.com  
Abstract Background and Aims Sarcopenia is a skeletal muscle disorder associated with adverse outcomes including falls, physical disability and mortality particularly in ...  
Referanse Legg til etiketter Slett

### Sarcopenia in older black South African women and relationships with physical activity and protein intake

AE Mendham, NE Brooks... - The Proceedings of ..., 2020 - search.proquest.com  
Materials and Methods Older black SA women (age, 68 (range: 60–85 years) n= 122) completed sociodemographic questionnaires, 24 h urine collection (estimate protein intake) ...  
Referanse Legg til etiketter Slett

### Exercise activates skeletal muscle satellite cells: exercise prevention and treatment for age-related sarcopenia and muscle injury

Z Wang, H Lin, F He, W Lin - Chinese Journal of Tissue Engineering, 2021 - cjtter.com  
BACKGROUND: Skeletal muscle is the main tissue to maintain human health, and sarcopenia affects people's health and quality of life. Muscle satellite cells are skeletal ...  
Referanse Legg til etiketter Slett [PDF] cjtter.com

### Effects of physical exercise programs on sarcopenia management, dynapenia, and physical performance in the elderly: a systematic review of randomized clinical ...

RGB Mello, RR Dalla Corte, J Gioscia... - Journal of aging, 2019 - lume.ufrgs.br  
Introduction. Sarcopenia is a prevalent condition in the elderly population, imposing a significant impact over their functional ability as well as their quality of life. Furthermore, it is ...  
Referanse Legg til etiketter Slett [PDF] ufrgs.br

### Sarcopenia and Frailty: exercise treating methodology

D Nikolaou - pdfs.semanticscholar.org  
Being given the characterization of the two sides of the same coin, sarcopenia and frailty, represent two geriatric syndromes that concern a great number of elder population. The ...  
Referanse Legg til etiketter Slett [PDF] semanticscholar.org

### Do the duration and frequency of physical activity affect the indicator of sarcopenia in older adult?

DV Oliveira, FC Yamashita, RM Santos... - Fisioterapia e, 2020 - SciELO Brasil  
Sarcopenia is a syndrome characterized by progressive loss of muscle mass and associated with adverse health outcomes in older adults. Physical activity has been pointed out as an ...  
Referanse Legg til etiketter Slett [HTML] scielo.br

### Randomised Clinical Trial: Effect of Adding Branched Chain Amino Acids to Exercise and Standard-of-care on Muscle Mass in Cirrhotic Patients With Sarcopenia

S Mohta, A Anand, S Sharma, S Qamar, S Agarwal... - 2021 - researchsquare.com  
Randomised Clinical Trial: Effect of Adding Branched Chain Amino Acids to Exercise and Standard-of-care on Muscle Mass in Cirrho Page 1 Page 1/22 Randomised Clinical Trial: Effect ...  
Referanse Legg til etiketter Slett [PDF] researchsquare.com

### FP418 SARCOPENIA, MUSCLE MASS AND PLASMA MYOSTATIN AFTER 12 MONTHS OF EXERCISE TRAINING IN PATIENTS WITH CKD: A SUB-STUDY OF ...

Y Zhou, M Hellberg, T Hellmark... - Nephrology Dialysis, 2019 - academic.oup.com  
METHODS: 2958 patients enrolled in the German Chronic Kidney Disease (GCKD) study (inclusion criteria: estimated glomerular filtration rate (eGFR) < 60 ml/min/1.73 m2 or ...  
Referanse Legg til etiketter Slett

### Combined Ketogenic Diet and Walking Exercise Interventions in Community Older Frailty and Skeletal Muscle Sarcopenia

JP Wu - 2021 - intechopen.com  
The ketogenic diet and walking exercise training interventions are two key public health lifestyle factors. The potential of combined lifestyle factors interventions focused on getting to ...  
Referanse Legg til etiketter Slett [HTML] intechopen.com

- Associations of Sarcopenia Components with Physical Function, Health-Related Quality of Life and Nutrition in Older Adults Performing Exercise Training  
E Akehurst - 2019 - vuir.vu.edu.au  
Background: Sarcopenia is an ageing-related muscle disease that can be prevented and treated with exercise, particularly resistance training. The purpose of this project was to ...  
Referanse Legg til etiketter Slett
- Prevalence and predictors of sarcopenia in an HIV cohort characterized by nutrition and physical activity parameters  
V Masi, M Mancini, A Caselgrandi, A Malagoli... - ..., 2018 - search.proquest.com  
This is an observational study of 941 HIV patients assessed at the Modena HIV Metabolic Clinic from January 2016 to June 2017. Sarcopenia was diagnosed in patients with reduced ...  
Referanse Legg til etiketter Slett
- The Association between the Ratio of Energy Intake to Basal Metabolic Rate and Physical Activity to Sarcopenia: Using the Korea National Health and Nutrition ...  
YJ Cho, MH Cho, B Han, M Park, S Bak... - Korean Journal of ..., 2020 - ncbi.nlm.nih.gov  
Background Sarcopenia is an important health problem, the risk factors of which a few studies have reported on. The purpose of this study was to evaluate the correlation between ...  
Referanse Legg til etiketter Slett
- Prevalence of sarcopenia and associations of sarcopenia components with physical function and health-related quality of life in Australian older adults performing ...  
E Akehurst, D Scott, JP Rodriguez, CA Gonzalez... - 2020 - researchsquare.com  
Background Sarcopenia can be prevented and treated with exercise, particularly resistance training. Our aim was to explore the prevalence of sarcopenia and associations of its ...  
Referanse Legg til etiketter Slett
- SARCOPENIA: Immunological Perspective and Efficacy of Exercise Interventions  
A Mathur, A Gupta - Int J Sci Res Sci Technol, 2018 - academia.edu  
Sarcopenia (Greek word "sarx" or flesh; penia or loss), syndrome is a progressive as well as ongoing and generalized loss of skeletal muscle mass and strength along with the risk of ...  
Referanse Legg til etiketter Slett
- Diet, physical activity, and sarcopenia among women with metastatic breast cancer  
R Barrett - 2019 - search.proquest.com  
Limited research is available exploring the prevalence of sarcopenia among women with metastatic breast cancer (MBC), and how lifestyle factors may affect muscle mass. The ...  
Referanse Legg til etiketter Slett
- Comments on:"the role of muscle mass gain following protein supplementation plus exercise therapy in older adults with sarcopenia and frailty risks: A systematic ...  
WT Chen, KCW Chu, CH Bai, YP Hsu - Nutrients, 2019 - mdpi.com  
First, the authors reported that PS plus muscle-strengthening exercise (MSE) significantly improved short-term and medium-term effects on lean body mass (LBM) and appendicular ...  
Referanse Legg til etiketter Slett
- Ageing-related frailty and sarcopenia. Exercise and rehabilitation for frailty and sarcopenia.  
Y Yoshimura - Clinical calcium, 2018 - europepmc.org  
Exercise is the core of prevention and treatment for frailty and sarcopenia. Progressive and individualized physical activity program including resistance movement should be applied in ...  
Referanse Legg til etiketter Slett
- Essential Amino Acid and Tea Catechin Supplementation after Resistance Exercise Improves Skeletal Muscle Mass in Older Adults with Sarcopenia: An Open-Label ...  
Y Tokuda, H Mori - Journal of the American Nutrition Association, 2022 - Taylor & Francis  
Abstract Objective: Tea catechins (TCCs) have gained significant attention owing to their health effects. However, evidence is limited regarding the benefit of TCC and essential ...  
Referanse Legg til etiketter Slett
- Mobility, exercise, nutrition and healthy ageing to avoid sarcopenia  
M Provan, T Mander - Post Reproductive Health, 2018 - journals.sagepub.com  
Is this muscle loss with ageing inevitable? Could this be changed? These were some of the questions which initially sprang to mind when exploring this area. Muscle mass is ...  
Referanse Legg til etiketter Slett

Sarcopenia: Molecular pathways and potential benefits of exercise training  
M Zargani, F Aghaei, F Arabzadeh, F Feizollahi... - Journal of Exercise & ... 2021 - jeoct.com [HTML] jeoct.com  
Sarcopenia, an age-associated phenomenon, is characterized by the reduced skeletal muscle mass and function. Research studies indicate that a wide range of factors can play a ...  
Referanse Legg til etiketter Slett

Exercise and Nutrition Impact on Osteoporosis and Sarcopenia—The Incidence of Osteosarcopenia: A Narrative Review. Nutrients 2021, 13, 4499 [PDF] researchgate.net  
SK Papadopoulou, K Papadimitriou, G Voulgaridou... - 2021 - researchgate.net  
Osteoporosis and sarcopenia are diseases which affect the myoskeletal system and often occur in older adults. They are characterized by low bone density and loss of muscle mass ...  
Referanse Legg til etiketter Slett

Beyond Physical Exercise: The Role of Nutrition, Gut Microbiota and Nutraceutical Supplementation in Reducing Age-related Sarcopenia  
A Banerjee, F Marotta, S Sriramulu... - Current Aging ... 2021 - ingentaconnect.com  
Sarcopenia is a commonly prevalent geriatric condition mainly characterized by progressive loss of the skeletal muscle mass that results in noticeably reduced muscle strength and ...  
Referanse Legg til etiketter Slett

Whole Body Vibration as an Exercise Modality to Prevent Sarcopenia and Osteoporosis  
J Rittweger - Osteoporotic Fracture and Systemic Skeletal Disorders, 2022 - Springer  
The age-related frailty syndrome is characterized by the parallel and interlinked appearance of generalized inflammation, metabolic derailment, muscle wasting and muscle weakening ...  
Referanse Legg til etiketter Slett

Exercise-Induced Autophagy in the Prevention and Treatment of Sarcopenia  
J Fan, X Mo, K Zou, N Chen - Exercise, Autophagy and Chronic Diseases, 2021 - Springer  
Sarcopenia is one of the aging-associated diseases with the gradual development over decades, and its development process consists of diverse changes including physiological ...  
Referanse Legg til etiketter Slett

Moderate-to-vigorous physical activity modifies the relationship between sedentary time and sarcopenia: the Tromsø Study 2015–2016 [PDF] wiley.com Full View  
J Johansson, B Morseth, D Scott... - Journal of cachexia ... 2021 - Wiley Online Library  
Background Sarcopenia is an age-related muscle disease primarily characterized by reductions in muscle strength that increases the risk of falls, fractures, cognitive impairment ...  
Referanse Legg til etiketter Slett

Use it or lose it—Sarcopenia and physical activity [HTML] jiaag.in  
S Rudra - Journal of the Indian Academy of Geriatrics, 2021 - jiaag.in  
Sarcopenia is a geriatric disease characterized by a marked loss of muscle mass and strength. This has led to it being recognized for the role it plays in elderly morbidity and ...  
Referanse Legg til etiketter Slett

Effects of elastic resistance exercise on postoperative outcomes linked to the ICF Core Sets for osteoarthritis after total knee replacement in overweight and obese ... [PDF] mdpi.com  
CD Liao, YS Chiu, JW Ku, SW Huang... - Journal of clinical ... 2020 - mdpi.com  
(1) Background: Knee osteoarthritis (KOA) and aging are associated with high sarcopenia risk; sarcopenia may further affect outcomes after total knee replacement (TKR). Elastic ...  
Referanse Legg til etiketter Slett

ROLA PROTEIN I AKTYWNOŚCI FIZYCZNEJ W LECZENIU I ZAPOBIEGANIU SARKOPENII PROTEIN AND PHYSICAL ACTIVITY IN PREVENTION AND ... [PDF] archive.org  
K Turzańska, M Drellich... - Wiadomości Lekarskie, 2019 - scholar.archive.org  
Zmiany demograficzne, jakim podlegają współczesne społeczeństwa, stale postępują. Stale wzrasta również przewidywalna długość życia. Niestety nie jest to równoznaczne z ...  
Referanse Legg til etiketter Slett

Comment on: sarcopenia and serum biomarkers of oxidative stress after a 6-month physical activity intervention in women with metastatic breast cancer—results from ... [PDF] springer.com  
I Kirac Utku, U Safer - Breast cancer research and treatment, 2022 - Springer  
We have read with great interest the article by Delrieu et al. reporting the positive effect of 6-month physical activity intervention on sarcopenia and serum biomarkers of oxidative stress ...  
Referanse Legg til etiketter Slett

Combined exercise and nutrition intervention for spinal sarcopenia: A pilot study protocol [HTML] nih.gov

SY Lee, J Park, DH Kim, JY Lim - Medicine, 2021 - ncbi.nlm.nih.gov  
Introduction: Spinal sarcopenia is a multifactorial disorder associated with the atrophy of and fatty changes to the paraspinal muscles. We previously developed the concept of spinal ...  
Referanse Legg til etiketter Slett

Oral nutritional supplements, physical activity, and sarcopenia in cancer [HTML] lww.com

J Wang, S Tan, G Wu - Current Opinion in Clinical Nutrition & ..., 2021 - journals.lww.com  
Recent findings highlighted the benefits of identifying sarcopenia and managing those at risk. The details of a multimodal protocol, such as components of nutritional substrates, the ...  
Referanse Legg til etiketter Slett

Effect of high-intensity resistance exercise on cardiometabolic health in older men with osteosarcopenia: the randomised controlled Franconian Osteopenia and ... [HTML] bmj.com  
Free from Publisher

W Kemmler, M Kohli, S von Stengel... - BMJ Open Sport & ..., 2020 - bmjopen.bmj.com  
Objectives Sarcopenia is related to the metabolic syndrome (MetS), a cluster of cardiometabolic risk-factors (CRF). Most exercise trials apply aerobic rather than resistance ...  
Referanse Legg til etiketter Slett

Foot orthosis treatment improves physical activity but not muscle quantity in patients with concurrent rheumatoid arthritis and sarcopenia [PDF] tandfonline.com

N Hishikawa, S Toyama, K Sawada... - Modern ..., 2021 - academic.oup.com  
Objectives Foot impairment in rheumatoid arthritis (RA) may exacerbate sarcopenia from physical inactivity because of foot pain while walking. The present study aimed to investigate ...  
Referanse Legg til etiketter Slett

Regulatory roles of microRNAs in sarcopenia and exercise intervention

JL Liang, JF Xie, CY Wang, N Chen - Sheng li xue bao [Acta ..., 2020 - europepmc.org  
Sarcopenia is an age-related degenerative disease, in which skeletal muscle mass and function are reduced during aging process. Physical intervention is one of the most effective ...  
Referanse Legg til etiketter Slett

Effects of milk or soy milk combined with mild resistance exercise on the muscle mass and muscle strength in very old nursing home residents with sarcopenia [PDF] mdpi.com

FYI Chiang, JR Chen, WJ Lee, SC Yang - Foods, 2021 - mdpi.com  
Background and aims: Sarcopenia is recognized as a major public health issue, because it is prevalent in the elderly, especially those who live in long-term care facilities. The purpose ...  
Referanse Legg til etiketter Slett

Association of physical activity with risk of liver fibrosis, sarcopenia, and cardiovascular disease in NAFLD

HS Chun, M Lee, HA Lee, SY Oh, HJ Baek... - Clinical ..., 2022 - Elsevier  
Abstract Background Aims International guidelines recommend physical activity for subjects with nonalcoholic fatty liver disease (NAFLD). This study investigated the association of ...  
Referanse Legg til etiketter Slett

High intensity resistance exercise training to improve body composition and strength in older men with Osteosarcopenia. Results of the randomized controlled ... [HTML] frontiersin.org

W Kemmler, M Weineck, M Kohli... - Frontiers in sports and ..., 2020 - frontiersin.org  
Considerably decreased muscle mass and function are subsumed under "sarcopenia", a geriatric syndrome. Dedicated exercise programs maintain muscle mass and function; ...  
Referanse Legg til etiketter Slett

Effects of resistance exercise on muscle mass, strength, and physical performances in elderly with diagnosed sarcopenia: a systematic review and meta-analysis [PDF] semanticscholar.org

KM Kim, HJ Kang - Exercise Science, 2020 - miami.pure.elsevier.com  
PURPOSE: Sarcopenia, also known as the age-related loss of muscle mass and muscle fitness, and physical performance, has been related to many adverse health outcomes ...  
Referanse Legg til etiketter Slett

Complex Exercise Improves Anti-Inflammatory and Anabolic Effects in Osteoarthritis-Induced Sarcopenia in Elderly Women [PDF] mdpi.com

J Park, J Bae, J Lee - Healthcare, 2021 - mdpi.com  
We investigated the effects of a 15-week complex exercise program on osteoarthritis and sarcopenia by analyzing anabolic effects and the impact on the activities of daily living ...  
Referanse Legg til etiketter Slett

- Adequate treatment of nutrition and exercise for elderly people associated with sarcopenia and nutritional disorder** [PDF] tokushima-u.ac.jp  
 H Bando, M Murakami... - International ..., 2020 - repo.lib.tokushima-u.ac.jp  
 The importance of exercise has been advocated for years. Exercise is roughly divided into aerobic exercise and resistance exercise [1]. In young people, irregular lifestyle is one of the ...  
 99 Referanse [Legg til etiketter](#) [Slett](#) [»](#)
- Can physical activity levels and relationships with energy expenditure change the clinical aspects of sarcopenia and perceptions of falls among elderly women ...** [HTML] scielo.br  
 VL Kemp, LS Piber, AP Ribeiro - Sao Paulo Medical Journal, 2021 - SciELO Brasil  
 ABSTRACT BACKGROUND: Physical activity (PA) is an effective strategy for managing sarcopenia in the elderly, but few studies have addressed PA levels regarding age-related ...  
 99 Referanse [Legg til etiketter](#) [Slett](#) [»](#)
- Reply to: "Comment on the role of muscle mass gain following protein supplementation plus exercise therapy in older adults with sarcopenia and frailty risks: A ...** [HTML] mdpi.com  
 CD Liao, HC Chen, SW Huang, TH Liou - Nutrients, 2019 - mdpi.com  
 First, the follow-up duration assessed in the included randomized control trial (RCT) was initially defined as follows: immediate follow up (< 3 months), short-term follow up (≥ 3 ...  
 99 Referanse [Legg til etiketter](#) [Slett](#) [»](#)
- Physical Activity and Sarcopenia in Community-Dwelling Older Adults with Long-Term Care Insurance** [HTML] mdpi.com  
 M Kitamura, KP Izawa, K Ishihara, H Matsuda... - European Journal of ..., 2021 - mdpi.com  
 The present study aimed to clarify the difference in physical activity (PA) due to sarcopenia in community-dwelling older adults with long-term care insurance (LTCI). This was a cross ...  
 99 Referanse [Legg til etiketter](#) [Slett](#) [»](#)
- Exercise Interventions to Prevent and Improve Sarcopenia**  
 MD Peterson, JA Serra - Sarcopenia, 2021 - Wiley Online Library  
 The age-related changes in morphological and functional characteristics of skeletal muscle are often accompanied by other comorbid conditions which may cluster and serve to worsen ...  
 99 Referanse [Legg til etiketter](#) [Slett](#) [»](#)
- Effect of Home-Based Exercise Program on Physical Function and Balance in Older Adults With Sarcopenia: A Multicenter Randomized Controlled Study**  
 EL Sen, S Eyyigor, MD Yaglı... - Journal of aging ..., 2021 - journals.humankinetics.com  
 In the prospective, randomized, controlled multicenter study, 100 patients who were clinically diagnosed with sarcopenia were assigned to either a home-based exercise group ...  
 99 Referanse [Legg til etiketter](#) [Slett](#) [»](#)
- Sarcopenia, oxidative stress and inflammatory process in muscle of cirrhotic rats—Action of melatonin and physical exercise** [HTML] sciencedirect.com  
 CGS Rosa, JR Colares, SRB da Fonseca... - Experimental and ..., 2021 - Elsevier  
 Sarcopenia is one of the most common features of cirrhosis, contributing to morbidity and mortality in this population. We aimed to evaluate the effect of melatonin (MLT) and exercise ...  
 99 Referanse [Legg til etiketter](#) [Slett](#) [»](#)
- Effect Size of Dietary Supplementation and Physical Exercise Interventions for Sarcopenia in Middle-Aged Women** [HTML] nih.gov  
 JM Park, YH Kim, SY Lee, AJ Kim - Preventive Nutrition and Food ..., 2021 - ncbi.nlm.nih.gov  
 The purpose of this meta-analysis was to comprehensively analyze the relationship between intervention (di-etary supplementation and physical exercise), body composition, and ...  
 99 Referanse [Legg til etiketter](#) [Slett](#) [»](#)
- Effect of running exercise on titanium dioxide (TiO2)-induced chronic arthritis and sarcopenia in mice. A titanium prosthesis loosening injury model study** [HTML] sciencedirect.com  
 PB Guirro, JHC Nunes, PS Cella, PC Marinello... - Life Sciences, 2022 - Elsevier  
 Aims This study aimed to investigate if titanium dioxide (TiO 2) joint administration is a useful pre-clinical model to study sarcopenia-related chronic arthritis, and if exercise is a useful ...  
 99 Referanse [Legg til etiketter](#) [Slett](#) [»](#)
- Healthy Beat Acupunch exercise program: Validation and feasibility study for older adults with reduced physical capacity or probable sarcopenia** [HTML] sciencedirect.com  
 C Jones, KM Chen, B Weeks, M Qi, W Moyle - Explore, 2021 - Elsevier  
 Objectives: This research aims to validate the Healthy Beat Acupunch (HBA) exercise program, determine the feasibility of the HBA exercise program protocol and gain an ...  
 99 Referanse [Legg til etiketter](#) [Slett](#) [»](#)



Forrige 9 10 11 12 13 14 15 16 17 18 Neste

Exercise-induced autophagy suppresses sarcopenia through Akt/mTOR and Akt/FoxO3a signal pathways and AMPK-mediated mitochondrial quality control  
Z Zeng, J Liang, L Wu, H Zhang, J Lv... - *Frontiers in Physiology*, 2020 - frontiersin.org  
Exercise training is one of the most effective interventional strategies for sarcopenia in aged people. Nevertheless, the underlying mechanisms are not well recognized. Increasing ...  
Referanse Legg til etiketter Slett

[HTML] frontiersin.org

The association between sarcopenia and decorin, an exercise-induced myokine, in patients with liver cirrhosis: a pilot study  
M Bekki, R Hashida, T Kawaguchi... - *JCSM Rapid ...*, 2018 - Wiley Online Library  
Background Sarcopenia frequently occurs in patients with liver cirrhosis (LC). The skeletal muscles secrete myokines, including myostatin, irisin, and decorin, which regulate skeletal ...  
Referanse Legg til etiketter Slett

[PDF] wiley.com

Sarcopenia, frailty and exercise  
HJN Bethell - *Clin Med*, 2017 - rcpjournals.org  
Many thanks to Offord and Witham for their article on sarcopenia. 1 They rightly identify low levels of physical exercise as a major cause of sarcopenia and subsequent frailty ...  
Referanse Legg til etiketter Slett

[PDF] rcpjournals.org

Exercise and protein supplementation for prevention and treatment of sarcopenia  
RQ Landers-Ramos, KR Dondero - *Current Geriatrics Reports*, 2019 - Springer  
Abstract Purpose of Review Sarcopenia results in disability and negatively impacts older adults' ability to live independently. The purpose of this review is to summarize the recent ...  
Referanse Legg til etiketter Slett

[HTML] springer.com

Sarcopenia and physical activity predict falls in older adults from Amazonas, Brazil  
KA Miranda, ER Gouveia, BR Gouveia... - ... en educación física ... , 2022 - dialnet.unirioja.es  
Introducción: La sarcopenia es un trastorno del músculo esquelético generalizado y progresivo que implica pérdida de masa y función muscular y se asocia con varios ...  
Referanse Legg til etiketter Slett

[PDF] unirioja.es

Cardiopulmonary exercise testing has greater prognostic value than sarcopenia in oesophago-gastric cancer patients undergoing neoadjuvant therapy and surgical ...  
MA West, WCA Baker, S Rahman... - *Journal of Surgical ...*, 2021 - Wiley Online Library  
Background Sarcopenia (low skeletal muscle mass), myosteatosis (low skeletal muscle radiation-attenuation) and fitness are independently associated with postoperative ...  
Referanse Legg til etiketter Slett

[PDF] wiley.com

Diet and exercise are not associated with skeletal muscle mass and sarcopenia in patients with bladder cancer  
Y Wang, A Chang, WP Tan, JJ Fantony... - *European urology ...*, 2021 - Elsevier  
Background There is limited understanding about why sarcopenia is happening in bladder cancer, and which modifiable and nonmodifiable patient-level factors affect its occurrence ...  
Referanse Legg til etiketter Slett

[HTML] sciencedirect.com

Exercise Experiences of Older Adults with Diabetes and Sarcopenia: A Phenomenological Study  
TR Lin, XY Huang, CM Hwu - *Clinical Nursing Research*, 2021 - journals.sagepub.com  
Sarcopenia is a common and progressive skeletal muscle condition, often described as an intermediate stage in the development of frailty and disability in patients with diabetes. This ...  
Referanse Legg til etiketter Slett

[PDF] sagepub.com

Management of dynapenia, sarcopenia, and frailty: The role of physical exercise  
RAC Sampaio, PY Sewo Sampaio... - *Journal of Aging ...*, 2020 - hindawi.com  
Aging is a result of physiological changes and their interactions with personal lifestyles, genetics, and chronic diseases. e musculoskeletal system and physical capabilities might ...  
Referanse Legg til etiketter Slett

[HTML] hindawi.com

A potential strategy for counteracting age-related sarcopenia: preliminary evidence of combined exercise training and leucine supplementation  
Z Xia, JM Cholewa, Y Zhao, Y Yang, H Shang... - *Food & function*, 2017 - pubs.rsc.org  
Previous research has demonstrated the positive effects of concurrent/combined aerobic and resistance exercise or leucine supplementation on skeletal muscle protein synthesis ...  
Referanse Legg til etiketter Slett

[HTML] rsc.org



- Study of the older adults' motivators and barriers engaging in a nutrition and resistance exercise intervention for sarcopenia: an embedded qualitative project in the ... [\[PDF\] sagepub.com](#)  
[L Dismore](#), [C Hurst](#), [AA Sayer](#)... - Gerontology and ..., 2020 - journals.sagepub.com  
 Objectives: The present study aimed to investigate motivators and barriers to older adults engaging in a nutrition and resistance exercise (RE) intervention for sarcopenia. Methods ...  
[Referanse](#) [Legg til etiketter](#) [Slett](#) [»](#)
- Effects of different exercise training modes on muscle strength and physical performance in older people with sarcopenia: a systematic review and meta-analysis [\[HTML\] springer.com](#)  
 L Lu, L Mao, Y Feng, [BE Ainsworth](#), Y Liu, N Chen - BMC geriatrics, 2021 - Springer  
 We conducted a systematic review and meta-analysis to clarify the effects of different exercise modes (resistance training [RT], whole body vibration training [WBVT], and mixed ...  
[Referanse](#) [Legg til etiketter](#) [Slett](#) [»](#)
- Inflammatory markers are associated with quality of life, physical activity, and gait speed but not sarcopenia in aged men (40–79 years) [\[PDF\] wiley.com](#)  
 Full View  
 J Dupont, [L Antonio](#), L Dedeigne... - Journal of cachexia ..., 2021 - Wiley Online Library  
 Background Age-related chronic low-grade inflammation (inflammaging) is one of the proposed mechanisms behind sarcopenia. However, findings regarding inflammatory ...  
[Referanse](#) [Legg til etiketter](#) [Slett](#) [»](#)
- Combined protein-rich diet with resistance exercise intervention to counteract sarcopenia: A qualitative study on drivers and barriers of compliance [\[PDF\] frieslandcampainstitute...](#)  
 AL Herrema, MJ Westerman... - Journal of aging ..., 2018 - journals.humankinetics.com  
 Interventions combining protein-rich diets with resistance exercises seem a promising avenue in helping to prevent sarcopenia. However, compliance to health interventions is ...  
[Referanse](#) [Legg til etiketter](#) [Slett](#) [»](#)
- Effects of protein-rich nutritional composition supplementation on sarcopenia indices and physical activity during resistance exercise training in older women with ... [\[PDF\] mdpi.com](#)  
[CD Liao](#), YH Liao, TH Liou, CY Hsieh, YC Kuo... - Nutrients, 2021 - mdpi.com  
 Older adults with knee osteoarthritis (KOA) are at high risk of sarcopenia. Protein-rich nutritional composition supplementation (PS) combined with resistance exercise training ...  
[Referanse](#) [Legg til etiketter](#) [Slett](#) [»](#)
- Protein-enriched, milk-based supplement to counteract sarcopenia in acutely ill geriatric patients offered resistance exercise training during and after hospitalisation ... [\[HTML\] bmj.com](#)  
 Free from Publisher  
 J Gade, AM Beck, C Bitz, B Christensen, TW Klausen... - BMJ open, 2018 - bmjopen.bmj.com  
 Introduction Age-related loss of muscle mass and strength, sarcopaenia, burdens many older adults. The process is accelerated with bed rest, protein intakes below requirements ...  
[Referanse](#) [Legg til etiketter](#) [Slett](#) [»](#)
- Relationship between quality of life, physical activity, nutrition, glycemic control and sarcopenia in older adults with type 2 diabetes mellitus [\[PDF\] mdpi.com](#)  
[C Casals-Vázquez](#), [E Suarez-Cadenas](#), EC FM... - Nutricion ..., 2017 - europepmc.org  
 The term sarcopenia is defined as age-related loss of skeletal muscle mass and function, with a consequent impact on quality of life. However, there is a lack of studies examining the ...  
[Referanse](#) [Legg til etiketter](#) [Slett](#) [»](#)
- The combination of physical exercise with muscle-directed antioxidants to counteract sarcopenia: a biomedical rationale for pleiotropic treatment with creatine and ... [\[HTML\] hindawi.com](#)  
[M Guescini](#), [L Tiano](#), [ML Genova](#), [E Polidori](#)... - ... Medicine and Cellular ..., 2017 - hindawi.com  
 Sarcopenia represents an increasing public health risk due to the rapid aging of the world's population. It is characterized by both low muscle mass and function and is associated with ...  
[Referanse](#) [Legg til etiketter](#) [Slett](#) [»](#)
- Association between levels of physical activity, sarcopenia, type 2 diabetes and the quality of life of elderly people in community dwellings in Lebanon [\[PDF\] mdpi.com](#)  
 D Saadeddine, [L Itani](#), [D Kreidieh](#), [D El Masri](#), [H Tannir](#)... - Geriatrics, 2021 - mdpi.com  
 There is a lack of data from developing countries on the link between physical activity (PA) on health outcomes. This study examines the association between the level of PA and ...  
[Referanse](#) [Legg til etiketter](#) [Slett](#) [»](#)
- Curcumin attenuates sarcopenia in chronic forced exercise executed aged mice by regulating muscle degradation and protein synthesis with antioxidant and anti ... [\[HTML\] acs.org](#)  
[DY Lee](#), YS Chun, [JK Kim](#), JO Lee, SK Ku... - Journal of Agricultural ..., 2021 - ACS Publications  
 The aim of the current study is to investigate the effects of spray dry powders of Curcuma longa containing 40% curcumin (CM-SD), as a new aqueous curcumin formula, on ...  
[Referanse](#) [Legg til etiketter](#) [Slett](#) [»](#)

- Relative efficacy of weight management, exercise, and combined treatment for muscle mass and physical sarcopenia indices in adults with overweight or obesity and ... [PDF] mdpi.com  
 SF Chu, TH Liou, [HC Chen](#), [SW Huang](#), CD Liao - *Nutrients*, 2021 - mdpi.com  
 Aging and osteoarthritis are associated with high risk of muscle mass loss, which leads to physical disability; this loss can be effectively alleviated by diet (DI) and exercise (ET) ...  
 Referanse Legg til etiketter Slett
- Exercise therapy for sarcopenia in rheumatoid arthritis: A meta-analysis and meta-regression of randomized controlled trials [PDF] sagepub.com  
[CD Liao](#), [HC Chen](#), [SW Huang](#)... - *Clinical ...*, 2021 - Journals.sagepub.com  
 Objective: Rheumatoid arthritis and age are associated with high sarcopenia risk. Exercise is an effective treatment for preventing muscle mass loss in older adult populations. It ...  
 Referanse Legg til etiketter Slett
- Myokines and adipokines in sarcopenia: understanding cross-talk between skeletal muscle and adipose tissue and the role of exercise [HTML] sciencedirect.com  
[MT Paris](#), [KE Bell](#), [M Mourtzakis](#) - *Current opinion in pharmacology*, 2020 - Elsevier  
 Detrimental age-associated changes in skeletal muscle and adipose tissue increase the risk of sarcopenia. Age-related changes in myokines, such as myostatin and irisin, as well as ...  
 Referanse Legg til etiketter Slett
- Effects of protein supplementation and exercise on delaying sarcopenia in healthy older individuals in Asian and non-Asian countries: a systematic review and meta ... [HTML] sciencedirect.com  
[L Li](#), [Y He](#), [N Jin](#), [H Li](#), [X Liu](#) - *Food Chemistry: X*, 2022 - Elsevier  
 While there is growing research interest in the effects of nutrition and exercise on delaying sarcopenia, the results are inconclusive and there is scarce information on regional patterns ...  
 Referanse Legg til etiketter Slett
- Combination of exercise training and resveratrol attenuates obese sarcopenia in skeletal muscle atrophy [HTML] cjphysiology.org  
[CH Bai](#), [J Alizargar](#), [CY Peng](#), [JP Wu](#) - *Chinese Journal of ...*, 2020 - cjphysiology.org  
 Obese sarcopenia is a progressive loss of skeletal muscle mass and strength with increases in adipocytes. The aim of this study was to investigate the effects of combination of exercise ...  
 Referanse Legg til etiketter Slett
- Multifactorial Mechanism of Sarcopenia and Sarcopenic Obesity. Role of Physical Exercise, Microbiota and Myokines [PDF] mdpi.com  
[J Błjski](#), [P Pierzchalski](#), [M Szczepanik](#), [J Bonior](#)... - *Cells*, 2022 - mdpi.com  
 Obesity and ageing place a tremendous strain on the global healthcare system. Age-related sarcopenia is characterized by decreased muscular strength, decreased muscle quantity ...  
 Referanse Legg til etiketter Slett
- A cross-sectional study about the relationship between physical activity and sarcopenia in Taiwanese older adults [HTML] nature.com  
[YC Ko](#), [WC Chie](#), [TY Wu](#), [CY Ho](#), [WR Yu](#) - *Scientific Reports*, 2021 - nature.com  
 To the best of our knowledge, none of Taiwanese studies on the relationship between physical activity (PA) and sarcopenia by the latest 2019 Asian Working Group for ...  
 Referanse Legg til etiketter Slett
- Associations of accelerometer-determined physical activity and sedentary behavior with sarcopenia and incident falls over 12 months in community-dwelling Swedish ... [HTML] sciencedirect.com  
[D Scott](#), [J Johansson](#), [A Gandham](#), [PR Ebeling](#)... - *Journal of sport and ...*, 2021 - Elsevier  
 Purpose This study was aimed to determine associations of accelerometer-determined time and bouts of sedentary behavior, light physical activity (LPA), and moderate-to-vigorous PA ...  
 Referanse Legg til etiketter Slett
- Does exercise-induced apelin affect sarcopenia? A systematic review and meta-analysis [PDF] researchgate.net  
[JH Bae](#), [SE Kwak](#), [JH Lee](#), [Z Yangjie](#), [W Song](#) - *Hormones*, 2019 - Springer  
 Purpose/objective There have been a number of studies on the role of the novel protein apelin, identified in 1998, in improving muscular function and structure in various human ...  
 Referanse Legg til etiketter Slett
- Depression and low physical activity are related to sarcopenia in hemodialysis: a single-center study [HTML] peerj.com  
[K Yuenyongchaiwat](#), [S Jongritthiporn](#), [K Somsamam](#)... - *PeerJ*, 2021 - peerj.com  
 Background The number of patients who suffer from chronic renal failure (CRF) has widely increased worldwide. Patients with advanced stages of CRF experience a gradual and ...  
 Referanse Legg til etiketter Slett



Forrige 12 13 14 15 16 17 18 19 20 21 Neste

Associations of sarcopenia components with physical activity and nutrition in Australian older adults performing exercise training  
 E Akehurst, D Scott, JP Rodriguez... - BMC ... , 2021 - bmcgeriatr.biomedcentral.com  
 The risk of progressive declines in skeletal muscle mass and strength, termed sarcopenia, increases with age, physical inactivity and poor diet. The purpose of this study was to ...  
 Referanse Legg til etiketter Slett

Anemia, sarcopenia, physical activity, and the risk of tuberculosis in the older population: a nationwide cohort study  
 JE Yoo, D Kim, H Choi, YA Kang... - ... in Chronic Disease, 2021 - journals.sagepub.com  
 Background: The aim of this study was to investigate whether physical activity, sarcopenia, and anemia are associated an with increased risk of tuberculosis (TB) among the older ...  
 Referanse Legg til etiketter Slett

Association between physical activity patterns and sarcopenia in Arab men  
 S Alkahtani, O Aljuhani, M Alhussain... - Journal of ... , 2020 - journals.sagepub.com  
 Objective In this study, we aimed to examine the association between physical activity patterns and sarcopenia in Arab men. Methods This cross-sectional study included 363 men ...  
 Referanse Legg til etiketter Slett

Difference in sarcopenia characteristics associated with physical activity and disability incidences in older adults  
 I Chiba, S Lee, S Bae, K Makino... - Journal of Cachexia ... , 2021 - Wiley Online Library  
 Background Deteriorated skeletal muscle condition, including sarcopenia, is a risk factor for disability in older adults. Promoting physical activity is a useful treatment for sarcopenia ...  
 Referanse Legg til etiketter Slett

Lifelong Aerobic Exercise Alleviates Sarcopenia by Activating Autophagy and Inhibiting Protein Degradation via the AMPK/PGC-1 $\alpha$  Signaling Pathway  
 J Liang, H Zhang, Z Zeng, L Wu, Y Zhang, Y Guo, J Lv... - Metabolites, 2021 - mdpi.com  
 Sarcopenia is an aging-induced syndrome characterized by a progressive reduction of skeletal muscle mass and strength. Increasing evidence has attested that appropriate and ...  
 Referanse Legg til etiketter Slett

Development and effects of combined exercise program for older adults with sarcopenia based on transtheoretical model  
 S Park, MO Gu - Journal of Korean Academy of Nursing, 2018 - synapse.koreamed.org  
 Purpose The purpose of this study was to develop and examine the effects of combined exercise program for older adults with sarcopenia based on transtheoretical model (TTM) ...  
 Referanse Legg til etiketter Slett

The Relationship between the Mechanism of Sarcopenia and Exercise Based on Data Mining  
 S Li, C Zheng, L Li - Computational and Mathematical Methods in ... , 2022 - hindawi.com  
 Due to the increasing prosperity of human life science and technology, many huge research results have been obtained, and the scientific research of molecular biology is developing ...  
 Referanse Legg til etiketter Slett

Effects of exercise and whey protein on muscle mass, fat mass, myoelectrical muscle fatigue and health-related quality of life in older adults: a secondary analysis of ...  
 B Kirk, K Mooney, R Cousins, P Angell... - European Journal of ... , 2020 - Springer  
 Purpose To investigate the effects of exercise in combination with, or without, a leucine-enriched whey protein supplement on muscle mass, fat mass, myoelectrical muscle fatigue ...  
 Referanse Legg til etiketter Slett

Systemic inflammation in the genesis of frailty and sarcopenia: an overview of the preventative and therapeutic role of exercise and the potential for drug treatments  
 SC Allen - Geriatrics, 2017 - mdpi.com  
 The clinical, pathological and biological characteristics of frailty and sarcopenia are becoming better understood and defined, including the role of systemic inflammation. It is ...  
 Referanse Legg til etiketter Slett

Clinical Impact of a Perioperative Exercise Program for Sarcopenia and Overweight/Obesity Gastric Cancer  
 T Aoyama, M Nakazono, S Nagasawa, K Segami - in vivo, 2021 - iv.iiarjournals.org  
 Gastrectomy with D2 lymph node dissection and perioperative adjuvant treatment is the standard treatment for locally advanced gastric cancer. However, the morality rate is ...  
 Referanse Legg til etiketter Slett



Forrige 13 14 15 16 17 18 19 20 21 22 Neste

Preserving mobility in older adults with physical frailty and sarcopenia: opportunities, challenges, and recommendations for physical activity interventions [HTML] nih.gov

[M Billot](#), [R Calvani](#), A Urtamo... - ... interventions in aging, 2020 - ncbi.nlm.nih.gov

One of the most widely conserved hallmarks of aging is a decline in functional capabilities. Mobility loss is particularly burdensome due to its association with negative health ...

Referanse Legg til etiketter Slett

Association of insufficient physical activity with sarcopenia and sarcopenic obesity in individuals aged 50 years or more [HTML] scielo.br

VR Santos, MYC Araujo, MR Cardoso, VC Batista... - Revista de ..., 2017 - SciELO Brasil

Objective: To analyze the association of insufficient physical activity in different domains with sarcopenia or sarcopenic obesity in patients aged ≥50 years. Methods: The sample ...

Referanse Legg til etiketter Slett

Are Canadian protein and physical activity guidelines optimal for sarcopenia prevention in older adults? [PDF] cdnsciencepub.com

[CLP Oliveira](#), IJ Dionne... - ... Physiology, Nutrition, and ..., 2018 - cdnsciencepub.com

Aging is characterized by physiological and morphological changes that affect body composition, strength, and function, ultimately leading to sarcopenia. This condition results ...

Referanse Legg til etiketter Slett

Exercise and dietary-protein as a countermeasure to skeletal muscle weakness: Liverpool Hope University–Sarcopenia Aging Trial (LHU-SAT) [HTML] frontiersin.org

[B Kirk](#), K Mooney, [F Amirabdollahian](#)... - Frontiers in ..., 2019 - frontiersin.org

Objective: To investigate the effects of a 16-week concurrent exercise regimen [resistance exercise (RE)+ functional exercise (FE)] in combination with, or without, a leucine-enriched ...

Referanse Legg til etiketter Slett

Milk and resistance exercise intervention to improve muscle function in community-dwelling older adults at risk of sarcopenia (MilkMAN): protocol for a pilot study [PDF] bmj.com  
Free from Publisher

[A Granic](#), [C Hurst](#), [L Dismore](#), K Davies, [E Stevenson](#)... - BMJ open, 2019 - bmjopen.bmj.com

Introduction Sarcopenia is a progressive muscle disorder characterised by decline in skeletal muscle mass, strength and function leading to adverse health outcomes, including ...

Referanse Legg til etiketter Slett

Leisure-time physical activity at moderate and high intensity is associated with parameters of body composition, muscle strength and sarcopenia in aged adults with ... [HTML] sciencedirect.com

N Rosique-Esteban, N Babio, A Díaz-López... - Clinical nutrition, 2019 - Elsevier

Aims We aimed to examine the associations of leisure-time physical activity (PA) and sedentary behavior (SB) with the prevalence of sarcopenia, body composition and muscle ...

Referanse Legg til etiketter Slett

Exercise and Nutrition Impact on Osteoporosis and Sarcopenia—The Incidence of Osteosarcopenia: A Narrative Review [PDF] mdpi.com

[SK Papadopoulos](#), K Papadimitriou, G Voulgaridou... - Nutrients, 2021 - mdpi.com

Osteoporosis and sarcopenia are diseases which affect the myoskeletal system and often occur in older adults. They are characterized by low bone density and loss of muscle mass ...

Referanse Legg til etiketter Slett

Effects of sarcopenia, body mass indices, and sarcopenic obesity on diastolic function and exercise capacity in Koreans [HTML] sciencedirect.com

[MH Jung](#), SH Ihm, SM Park, [HO Jung](#), KS Hong... - Metabolism, 2019 - Elsevier

Aims Obesity induces left ventricular diastolic dysfunction and ultimately causes heart failure. Sarcopenic obesity is common in heart failure with preserved ejection fraction ...

Referanse Legg til etiketter Slett

L-Citrulline Supplementation and Exercise in the Management of Sarcopenia [PDF] mdpi.com

A Caballero-García, J Pascual-Fernández... - Nutrients, 2021 - mdpi.com

Sarcopenia is a process associated to aging. Persistent inflammation and oxidative stress in muscle favour muscle wasting and decreased ability to perform physical activity. Controlled ...

Referanse Legg til etiketter Slett

Impact of exercise training on the sarcopenia criteria in non-alcoholic fatty liver disease: a systematic review and meta-analysis [HTML] nih.gov

[A Gonzalez](#), M Valero-Breton... - European Journal of ..., 2021 - ncbi.nlm.nih.gov

Sarcopenia is a highly prevalent complication of non-alcoholic fatty liver disease (NAFLD). We aimed to conduct a systematic review and meta-analyses to elucidate the exercise ...

Referanse Legg til etiketter Slett



Physical activity decreases the risk of sarcopenia and sarcopenic obesity in older adults with the incidence of clinical factors: 24-month prospective study  
V Ribeiro Santos, B Dias Correa... - Experimental aging ..., 2020 - Taylor & Francis  
ABSTRACT Background/Study: The occurrence of sarcopenia and sarcopenic obesity (SO) may be associated with modifiable behavioral factors such as insufficient physical activity ...  
Referanse Legg til etiketter Slett

Association of sarcopenia and physical activity with functional outcome in older Asian patients hospitalized for rehabilitation  
T Ohtsubo, M Nozoe, M Kanai, I Yasumoto... - Aging clinical and ..., 2021 - Springer  
Background Previous studies reported that sarcopenia and physical inactivity affected clinical outcome in older adults; however, the association with functional outcome has not ...  
Referanse Legg til etiketter Slett

Peripheral Blood T Cell Gene Expression Responses to Exercise and HMB in Sarcopenia  
SL Ma, J Wu, L Zhu, RSM Chan, X Wang, D Huang... - Nutrients, 2021 - mdpi.com  
Background: Sarcopenia is a major health problem in older adults. Exercise and nutrient supplementation have been shown to be effective interventions but there are limited studies ...  
Referanse Legg til etiketter Slett

Sarcopenia, exercise and quality of life  
J Mielgo-Ayuso, D Fernández-Lázaro - International Journal of ..., 2021 - mdpi.com  
The loss of strength, power, and muscle mass caused by the progressive deterioration from aging is known as "sarcopenia." This age-related disease is closely related to the ...  
Referanse Legg til etiketter Slett

Expression of Telomeric Repeat-Containing RNA Decreases in Sarcopenia and Increases after Exercise and Nutrition Intervention  
KY Chang, YC Chen, WT Wu, HJ Shen, KC Huang... - Nutrients, 2020 - mdpi.com  
Sarcopenia is defined as aging-related loss of muscle mass and function. Telomere length in chromosomes shortens with age and is modulated by telomeric repeat-containing RNA ...  
Referanse Legg til etiketter Slett

Effects of exercise on muscle mass, strength, and physical performance in older adults with sarcopenia: A systematic review and meta-analysis according to the ...  
A Escriche-Escuder, IJ Fuentes-Abolaño... - Experimental ..., 2021 - Elsevier  
Abstract Background In 2018, the European Working Group on Sarcopenia in Older People (EWGSOP) updated the definition and the diagnosis criteria of sarcopenia. Previous ...  
Referanse Legg til etiketter Slett

Resistance exercise and nutritional interventions for augmenting sarcopenia outcomes in chronic kidney disease: a narrative review  
H Noor, J Reid, A Slee - Journal of Cachexia, Sarcopenia and ..., 2021 - Wiley Online Library  
Sarcopenia is an age-related progressive muscle disease characterized by loss of muscle mass, muscle strength and physical performance with high prevalence in chronic kidney ...  
Referanse Legg til etiketter Slett

Sarcopenia and serum biomarkers of oxidative stress after a 6-month physical activity intervention in women with metastatic breast cancer: results from the ABLE ...  
L Delrieu, A Martin, M Touillaud, O Pérol... - Breast cancer research ..., 2021 - Springer  
Purpose Sarcopenia has been identified as an important prognostic factor for patients with cancer. This study aimed at exploring the potential associations between a 6-month physical ...  
Referanse Legg til etiketter Slett

Effects of physical exercise programs on sarcopenia management, dynapenia, and physical performance in the elderly: a systematic review of randomized clinical ...  
RGB de Mello, RR Dalla Corte, J Gioscia... - Journal of aging ..., 2019 - hindawi.com  
Introduction. Sarcopenia is a prevalent condition in the elderly population, imposing a significant impact over their functional ability as well as their quality of life. Furthermore, it is ...  
Referanse Legg til etiketter Slett

Association between polygenetic risk scores related to sarcopenia risk and their interactions with regular exercise in a large cohort of Korean adults  
S Park - Clinical Nutrition, 2021 - Elsevier  
Background & aims Sarcopenia elevates metabolic disorders in the elderly, and genetic and environmental factors influence the risk of sarcopenia. The purpose of the study was to ...  
Referanse Legg til etiketter Slett

Targeting inflammation and downstream protein metabolism in sarcopenia: a brief up-dated description of concurrent exercise and leucine-based multimodal ... [HTML] frontiersin.org  
Z Xia, J Cholewa, Y Zhao, HY Shang, YQ Yang... - Frontiers in ..., 2017 - frontiersin.org  
Sarcopenia is defined as the progressive loss of muscle mass with age, and poses a serious threat to the physiological and psychological health of the elderly population with ...  
Referanse Legg til etiketter Slett

Nutrition and physical activity countermeasures for sarcopenia: Time to get personal? [PDF] wiley.com  
CH Murphy, HM Roche - Nutrition Bulletin, 2018 - Wiley Online Library  
Population ageing is a global phenomenon. It is regarded as a major cause of upward pressure on healthcare costs. One of the greatest threats to healthy, independent ageing is ...  
Referanse Legg til etiketter Slett

The most effective factors to offset sarcopenia and obesity in the older Korean: physical activity, vitamin D, and protein intake [HTML] sciencedirect.com  
C Oh, BH Jeon, SNR Storm, S Jho, JK No - Nutrition, 2017 - Elsevier  
Objective The aim of this study was to evaluate the effects of the types and levels of physical activity in conjunction with protein intake and vitamin D on sarcopenia and obesity status in ...  
Referanse Legg til etiketter Slett

Possible Sarcopenia and Impact of Dual-Task Exercise on Gait Speed, Grip Strength, Falls and Perceived Health [PDF] frontiersin.org  
RA Merchant, YH Chan, RY Hui, JY Lim... - Frontiers in ..., 2021 - frontiersin.org  
Background: Sarcopenia is defined as a progressive age-related loss in muscle mass and strength affecting physical performance. It is associated with many negative outcomes ...  
Referanse Legg til etiketter Slett

Effects of home-based tele-exercise on sarcopenia among community-dwelling elderly adults: Body composition and functional fitness [HTML] sciencedirect.com  
J Hong, J Kim, SW Kim, HJ Kong - Experimental gerontology, 2017 - Elsevier  
Objectives This study aims to develop a form of tele-exercise that would enable real-time interactions between exercise instructors and community-dwelling elderly people and to ...  
Referanse Legg til etiketter Slett

Effectiveness of a short-term mixed exercise program for treating sarcopenia in hospitalized patients aged 80 years and older: a prospective clinical trial [PDF] proquest.com  
R Wang, Y Liang, J Jiang, M Chen, L Li, H Yang... - The journal of nutrition ..., 2020 - Springer  
Objectives To assess the effectiveness of short-term exercise for treating sarcopenia in hospitalized older patients aged 80 years and over. Design Prospective clinical trial. Setting ...  
Referanse Legg til etiketter Slett

Improving muscle strength and preventing sarcopenia and cachexia in chronic kidney disease and transplanted patients by physical activity and exercise [HTML] nih.gov  
K Kalantar-Zadeh, LW Moore - Journal of Renal Nutrition, 2019 - jrnljournal.org  
THIS ISSUE OF the Journal of Renal Nutrition (JREN) is dedicated to the topic of physical activity and exercise in kidney disease, which is inherently related to several themes and ...  
Referanse Legg til etiketter Slett

Exercise programs for muscle mass, muscle strength and physical performance in older adults with sarcopenia: a systematic review and meta-analysis [HTML] nih.gov  
W Bao, Y Sun, T Zhang, L Zou, X Wu, D Wang... - Aging and ..., 2020 - ncbi.nlm.nih.gov  
Sarcopenia is an age-related condition that is characterized by progressive and generalized loss of muscle mass and function. Exercise treatment has been the most commonly used ...  
Referanse Legg til etiketter Slett

Evidence on physical activity and the prevention of frailty and sarcopenia among older people: A systematic review to inform the world health organization physical ... [HTML] humankinetics.com  
JS Oliveira, MB Pinheiro, N Fairhall... - ... of Physical Activity ..., 2020 - journals.humankinetics.com  
Background: Frailty and sarcopenia are common age-related conditions associated with adverse outcomes. Physical activity has been identified as a potential preventive strategy for ...  
Referanse Legg til etiketter Slett




Effects of exercise and nutrition supplementation in community-dwelling older Chinese people with sarcopenia: a randomized controlled trial [HTML] academic.oup.com  
LY Zhu, R Chan, I Kwok, KCC Cheng, A Ha... - Age and ..., 2019 - academic.oup.com  
Background Limited trials examining the effect of exercise and nutrition supplementation in older people with sarcopenia are available. Objectives to assess the impact of resistance ...  
Referanse Legg til etiketter Slett

- MicroRNAs associated with signaling pathways and exercise adaptation in sarcopenia  
[Z Javanmardifard](#), [S Shahrbanian](#), [S J Mowla](#) - Life Sciences, 2021 - Elsevier  
 Considering the expansion of human life-span over the past few decades; sarcopenia, a physiological consequence of aging process characterized with a diminution in mass and ...  
 99 Referanse [Legg til etiketter](#) [Slett](#) [»](#) [HTML] sciencedirect.com
- Resistance exercise as a treatment for sarcopenia: prescription and delivery  
[C Hurst](#), [SM Robinson](#), [MD Witham](#), [RM Dodds](#) ... - Age and ..., 2022 - academic.oup.com  
 Sarcopenia is a generalised skeletal muscle disorder characterised by reduced muscle strength and mass and associated with a range of negative health outcomes. Currently ...  
 99 Referanse [Legg til etiketter](#) [Slett](#) [»](#) [HTML] oup.com
- Strategies to Prevent Sarcopenia in the Aging Process: Role of Protein Intake and Exercise  
[PS Rogeri](#), [R Zanella Jr](#), [GL Martins](#), [MDA Garcia](#)... - Nutrients, 2021 - mdpi.com  
 Sarcopenia is one of the main issues associated with the process of aging. Characterized by muscle mass loss, it is triggered by several conditions, including sedentary habits and ...  
 99 Referanse [Legg til etiketter](#) [Slett](#) [»](#) [PDF] mdpi.com
- Sarcopenia, diet, physical activity and obesity in european middle-aged and older adults: The lifeage study  
[PJ Marcos-Pardo](#), [N González-Gálvez](#) ... - Nutrients, 2020 - mdpi.com  
 The revised European consensus defined sarcopenia as a progressive and generalized skeletal muscle disorder that is associated with an increased likelihood of adverse outcomes ...  
 99 Referanse [Legg til etiketter](#) [Slett](#) [»](#) [HTML] mdpi.com
- Relationship between sarcopenia and both physical activity and lifestyle in patients with chronic liver disease  
[K Ohashi](#), [T Ishikawa](#), [A Hoshi](#), [M Suzuki](#)... - Journal of clinical ..., 2018 - ncbi.nlm.nih.gov  
 Background Sarcopenia can affect the prognosis of patients with cirrhosis or hepatocellular carcinoma. Exercise therapy and nutritional therapy are carried out to prevent processing ...  
 99 Referanse [Legg til etiketter](#) [Slett](#) [»](#) [HTML] nih.gov
- Physical activity and sarcopenia in older adults  
[NF Meier](#), [D Lee](#) - Aging Clinical and Experimental Research, 2020 - Springer  
 Background Sarcopenia is prevalent in ever growing older adult populations. Aim The aim of this study was to quantify the association between physical activity (PA), sedentary time ...  
 99 Referanse [Legg til etiketter](#) [Slett](#) [»](#) [PDF] proquest.com
- Sedentary behaviour, physical activity, and sarcopenia among older adults in the TSHA: isotemporal substitution model  
[JL Sánchez-Sánchez](#), [A Mañas](#)... - Journal of cachexia ..., 2019 - Wiley Online Library  
 Background The associations between free-living physical activity (PA) and sedentary behaviour (SB) and sarcopenia in older people and its determinants are controversial. Self ...  
 99 Referanse [Legg til etiketter](#) [Slett](#) [»](#) [PDF] wiley.com Full View
- The effects of group and home-based exercise programs in elderly with sarcopenia: a randomized controlled trial  
[M Tsekoura](#), [E Billis](#), [E Tsepis](#), [Z Dimitriadis](#)... - Journal of clinical ..., 2018 - mdpi.com  
 Physical exercise is effective for sarcopenic elderly but evidence for the most effective mode of exercise is conflicting. The objective of this study was to investigate the effects of a three ...  
 99 Referanse [Legg til etiketter](#) [Slett](#) [»](#) [PDF] mdpi.com
- Physical exercise, nutrition and hormones: three pillars to fight sarcopenia  
[P Sgrò](#), [M Sansone](#), [A Sansone](#), [S Sabatini](#)... - The Aging ..., 2019 - Taylor & Francis  
 Background: Sarcopenia is a pathophysiological condition diffused in elderly people; it represents a social issue due to the longer life expectancy and the growing aging ...  
 99 Referanse [Legg til etiketter](#) [Slett](#) [»](#) [PDF] tandfonline.com Full View
- Exercise, Nutrition, and combined exercise and nutrition in older adults with sarcopenia: A systematic review and network meta-analysis  
[PY Wu](#), [KS Huang](#), [KM Chen](#), [CP Chou](#), [YK Tu](#) - Maturitas, 2021 - Elsevier  
 It is unclear whether the combined effects of exercise and nutrition are better than those of exercise alone or nutrition alone in older adults with sarcopenia. This paper assesses the ...  
 99 Referanse [Legg til etiketter](#) [Slett](#) [»](#) [HTML] sciencedirect.com




Regulation of microRNAs in satellite cell renewal, muscle function, sarcopenia and the role of exercise [PDF] mdpi.com

S Fochi, G Giurato, T De Simone... - International Journal of ..., 2020 - mdpi.com  
Sarcopenia refers to a condition of progressive loss of skeletal muscle mass and function associated with a higher risk of falls and fractures in older adults. Musculoskeletal aging ...  
99 Referanse  Legg til etiketter  Slett 




Sarcopenia and its relationships with depression, cognition, and physical activity in Thai community-dwelling older adults [HTML] hindawi.com

K Yuenyongchaiwat, R Boonsinsukh - Current gerontology and ..., 2020 - hindawi.com  
Background. Age-related sarcopenia is associated with physical decline, including poor functional capacity, lack of physical activity, problems with activities of daily living, and ...  
99 Referanse  Legg til etiketter  Slett 




Association between sarcopenia and nutritional status and physical activity among community-dwelling Chinese adults aged 60 years and older [PDF] wiley.com

S Hai, L Cao, H Wang, J Zhou, P Liu... - Geriatrics & ..., 2017 - Wiley Online Library  
Aim Aim The aim of the present study was to examine the association between sarcopenia and nutritional status and physical activity among community-dwelling Chinese people ...  
99 Referanse  Legg til etiketter  Slett 




Physical activity and sarcopenia in the geriatric population: a systematic review [HTML] sciencedirect.com

SY Lee, HH Tung, CY Liu, LK Chen - Journal of the American Medical ..., 2018 - Elsevier  
Introduction Sarcopenia is an aging-related health problem in the geriatric population. Sarcopenia reduces muscle mass, muscle strength, and physical performance. Although ...  
99 Referanse  Legg til etiketter  Slett 




Physical exercise and myokines: relationships with sarcopenia and cardiovascular complications [PDF] mdpi.com

SM Barbalho, UAP Flato, RJ Tofano... - International Journal of ..., 2020 - mdpi.com  
Skeletal muscle is capable of secreting different factors in order to communicate with other tissues. These mediators, the myokines, show potentially far-reaching effects on non-muscle ...  
99 Referanse  Legg til etiketter  Slett 




Exercise interventions in healthy older adults with sarcopenia: a systematic review and meta-analysis [PDF] wiley.com

L Vlietstra, W Hendrickx... - Australasian journal on ..., 2018 - Wiley Online Library  
Objective To systematically assess the effects of exercise interventions on body composition and functional outcomes in older adults with sarcopenia. Methods PubMed/Medline ...  
99 Referanse  Legg til etiketter  Slett 




Exercise and physical activity for patients with end-stage liver disease: improving functional status and sarcopenia while on the transplant waiting list [PDF] wiley.com

A Duarte-Rojo, A Ruiz-Margáin... - Liver ..., 2018 - Wiley Online Library  
Sarcopenia and physical deconditioning are frequent complications in patients with cirrhosis and end-stage liver disease (ESLD). They are the end result of impaired dietary intake ...  
99 Referanse  Legg til etiketter  Slett 




Exercise interventions for the prevention and treatment of sarcopenia. A systematic umbrella review [HTML] springer.com

D Beckwée, A Delaere, S Aelbrecht, V Baert... - The journal of nutrition ..., 2019 - Springer  
Objectives The aim of this systematic review is to provide an overview of the efficacy of different exercise interventions to counter sarcopenia in older adults. This review will allow ...  
99 Referanse  Legg til etiketter  Slett 

Exercise and protein intake: a synergistic approach against sarcopenia [HTML] hindawi.com

AM Martone, E Marzetti, R Calvani, A Picca... - BioMed Research ..., 2017 - hindawi.com  
Sarcopenia, the age-dependent loss of muscle mass and function/strength, is increasingly recognized as a major risk factor for adverse outcomes in frail older people. As such, the ...  
99 Referanse  Legg til etiketter  Slett 

Aging, obesity, sarcopenia and the effect of diet and exercise intervention [HTML] sciencedirect.com

G Colleluori, DT Villareal - Experimental gerontology, 2021 - Elsevier  
The number of adults 65 years and older is increasing worldwide and will represent the 20% of the population by 2030. Half of them will suffer from obesity. The decline in muscle mass ...  
99 Referanse  Legg til etiketter  Slett 



Forrige 15 16 17 18 19 20 21 22 23 24 Neste



Rehabilitation nutrition and exercise therapy for sarcopenia  
S Kakehi, H Wakabayashi, H Inuma... - The World Journal of ..., 2022 - ncbi.nlm.nih.gov  
Sarcopenia is an age-related loss of skeletal muscle associated with adverse outcomes such as falls, fractures, disability, and increased mortality in older people and hospitalized ...  
Referanse Legg til etiketter Slett

[HTML] nih.gov

Sarcopenia, frailty and their prevention by exercise  
CM Nascimento, M Ingles, A Salvador-Pascual... - Free Radical Biology ..., 2019 - Elsevier  
Sarcopenia is a major component of the frailty syndrome, both being considered as strong predictors of morbidity, disability, and death in older people. In this review, we explore the ...  
Referanse Legg til etiketter Slett

[HTML] sciencedirect.com

Nutrition and physical activity in the prevention and treatment of sarcopenia: systematic review  
C Beaudart, A Dawson, SC Shaw, NC Harvey... - Osteoporosis ..., 2017 - Springer  
This systematic review summarizes the effect of combined exercise and nutrition intervention on muscle mass and muscle function. A total of 37 RCTs were identified. Results indicate ...  
Referanse Legg til etiketter Slett

[HTML] springer.com

Biochemical pathways of sarcopenia and their modulation by physical exercise: a narrative review  
MM Ziaaldini, E Marzetti, A Picca, Z Murlasits - Frontiers in Medicine, 2017 - frontiersin.org  
Aging is a complex process characterized by progressive multisystem derangement predisposing individuals to increased risk of developing negative health outcomes ...  
Referanse Legg til etiketter Slett

[HTML] frontiersin.org

Physical activity and exercise as countermeasures to physical frailty and sarcopenia  
E Marzetti, R Calvani, M Tosato, M Cesari... - Aging clinical and ..., 2017 - Springer  
The identification of cost-effective interventions that improve the health status and prevent disability in old age is one of the most important public health challenges. Regular physical ...  
Referanse Legg til etiketter Slett

[HTML] springer.com

Nutrition and exercise in sarcopenia  
SD Anton, A Hida, R Mankowski... - Current Protein and ..., 2018 - ingentaconnect.com  
Sarcopenia is a debilitating condition that involves loss of muscle mass and function, which affects virtually everyone as they age, and can lead to frailty and ultimately disability. In ...  
Referanse Legg til etiketter Slett

Relationship between sarcopenia and physical activity in older people: a systematic review and meta-analysis  
M Steffl, RW Bohannon, L Sontakova... - Interventions in aging, 2017 - ncbi.nlm.nih.gov  
Physical activity (PA) has been identified as beneficial for many diseases and health disorders, including sarcopenia. The positive influence of PA interventions on sarcopenia ...  
Referanse Legg til etiketter Slett

[HTML] nih.gov

Sarcopenia and exercise "The State of the Art"  
G Musumeci - Journal of Functional Morphology and Kinesiology, 2017 - mdpi.com  
Skeletal muscle mass reduction might be a consequence of aging (sarcopenia), disease (cachexia) or inactivity (muscle atrophy). Studying the triggering factors leading to muscle ...  
Referanse Legg til etiketter Slett

[PDF] mdpi.com

Protein and exercise in the prevention of sarcopenia and aging  
MA Naseeb, SL Volpe - Nutrition research, 2017 - Elsevier  
Aging is associated with a progressive decline in skeletal muscle mass and strength. The decline, known as sarcopenia, could lead to physical disability, poor quality of life, and ...  
Referanse Legg til etiketter Slett

[HTML] sciencedirect.com

Relationship between quality of life, physical activity, nutrition, glycemic control and sarcopenia in older adults with type 2 diabetes mellitus  
C Casals-Vázquez, E Suarez-Cadenas, EC FM, AT MP... - Nutricion hospitalaria, 2017  
Referanse Legg til etiketter Slett



Forrige 15 16 17 18 19 20 21 22 23 24

# US National Library of Medicine

## ClinicalTrials.gov Search Results 03/16/2022

Title	Status	Study Results	Conditions	Interventions	Locations
1 <a href="#">Sarcopenia and Combined-modality Exercise</a>	Terminated	No Results Available	•Sarcopenia	•Other: High intensity exercise •Other: Usual care home exercise	•UHI Solutions for Developing Countries (SODECO), Kingston 7, KSA, Jamaica
2 <a href="#">Sarcopenia and Physical Activity Intervention: a Randomized-controlled Trial</a>	Not yet recruiting	No Results Available	•Sarcopenia	•Behavioral: Home-based physical activity	
3 <a href="#">Outcome of Exercise With a Towel in Elderly With Sarcopenia</a>	Completed	No Results Available	•Sarcopenia	•Procedure: Exercise with a towel •Procedure: Home-based exercise	•Wujia Senior Citizens activity Center of Kaohsiung City Government, Kaohsiung, Taiwan
4 <a href="#">Effect of Home-Based Exercise Program in Older Adults With Sarcopenia</a>	Completed	No Results Available	•Sarcopenia	•Other: Home based exercise	•Balikesir University Faculty of Medicine, Department of Physical Therapy and Rehabilitation, Balikesir, Turkey •Istanbul Bakirkoy Dr. Sadi Konuk Training and Research Hospital, Istanbul, Turkey •Istanbul Physical Medicine and Rehabilitation Training and Research Hospital, Istanbul, Turkey •Istanbul University Istanbul Faculty of Medicine, Department of Physical Medicine and Rehabilitation, Istanbul, Turkey •Ege University Faculty of Medicine, Department of Physical Medicine and Rehabilitation, Izmir, Turkey
5 <a href="#">Exercise Intervention for Patients With Sarcopenia or Frailty in Long-Term Care Institutions</a>	Completed	No Results Available	•Sarcopenia	•Behavioral: Group exercise program •Behavioral: Self exercise program	•Bor-Ay Sweet home, Keelung, Taiwan
6 <a href="#">Sarcopenia Physical Activity and Metabolic</a>	Not yet recruiting	No Results Available	•Sarcopenia	•Behavioral: Physical activity programm	•CHU de Nice, Nice, France
7 <a href="#">Combined Exercise and Nutrition Intervention for Spinal Sarcopenia</a>	Not yet recruiting	No Results Available	•Sarcopenia	•Other: Combined exercise and nutrition intervention	
8 <a href="#">Home-based Progressive Resistance Exercise to Enhance Physical Performance of Older Adults With Possible Sarcopenia</a>	Recruiting	No Results Available	•Sarcopenia	•Behavioral: Exercise	•Community, Hong Kong, Hong Kong
9 <a href="#">Time Efficient Exercise to Reverse Sarcopenia and Improve Cardio-metabolic Health</a>	Not yet recruiting	No Results Available	•Exercise Training and Sarcopenia	•Other: Exercise	•University of Texas at Austin Human Performance Laboratory, Austin, Texas, United States
10 <a href="#">Physical Activity Program for Counteracting Sarcopenia</a>	Active, not recruiting	No Results Available	•Sarcopenia	•Behavioral: Physical activity •Dietary Supplement: Physical activity and supplementation •Other: Control	•IRCCS Istituto Ortopedico Galeazzi, Milan, Italy
11 <a href="#">Multidisciplinary Combined Exercise and Nutrition Intervention for Sarcopenia</a>	Not yet recruiting	No Results Available	•Sarcopenia	•Combination Product: Combined exercise and nutrition intervention •Other: Conventional medical care	•Seoul National University Bundang Hospital, Seongnam-si, Gyeonggi-do, Korea, Republic of
12 <a href="#">Effect of Nutrition Supplementation Combined With Resistance Exercise in Elderly With Sarcopenia</a>	Completed	No Results Available	•Sarcopenia	•Dietary Supplement: milk supplement •Dietary Supplement: soy milk supplement •Behavioral: resistance exercise	•Taipei Medical University, New Taipei City, Taiwan
13 <a href="#">The Effect of Tai Chi Exercise Among Elders With Sarcopenia</a>	Not yet recruiting	No Results Available	•Sarcopenia in Elderly •Tai Chi	•Behavioral: Tai-Chi •Behavioral: Comprehensive training	•China Medical University Hospital, Taichung, Taiwan
14 <a href="#">Muscle Capillarization and Sarcopenia</a>	Recruiting	No Results Available	•Sarcopenia	•Other: Aerobic exercise training •Other: Strength training	•University of Maryland, Baltimore & Baltimore VA Medical Center, Baltimore, Maryland, United States •University of Maryland, College Park, Maryland, United States

- Page 1 of 8 -

Title	Status	Study Results	Conditions	Interventions	Locations
15 <a href="#">Resistance Exercise or Vibration With HMB for Sarcopenia</a>	Recruiting	No Results Available	•Sarcopenia	•Dietary Supplement: Hydroxymethylbutyrate •Device: Low-magnitude High Frequency Vibration (LMHFV) •Behavioral: Elastic-band Exercise	•Evangelical Lutheran Church Social Service - Hong Kong, Hong Kong, Hong Kong
16 <a href="#">Imaging Biomarkers of the Effects of a Mixed Exercise Program</a>	Completed	No Results Available	•Sarcopenia	•Other: Mixed exercise program	•University of Valencia - Faculty of Physiotherapy, Valencia, Spain
17 <a href="#">Identification of Sarcopenia in Knee Osteoarthritis With Ultrasonography and Evaluation of Muscle Architecture Change by Ultrasonography After Isokinetic Exercise Program</a>	Recruiting	No Results Available	•Osteoarthritis of the Knee •Sarcopenia	•Other: Knee strengthening exercises with isokinetic dynamometer •Other: Strengthening around the knees with	•Hatay Mustafa Kemal University, Hatay, Antakya, Turkey

18	<a href="#">Short-Term Resistance Training in Older Adults</a>	Completed	No Results Available	•Sarcopenia •Muscle Quality	•Behavioral: Resistance exercise program	•University of Kansas-Edwards Campus; Exercise and Human Performance Laboratory, Overland Park, Kansas, United States
19	<a href="#">HIGH AND LOW INTENSITY PROGRESSIVE RESISTED EXERCISES ON PAIN, RANGE OF MOTION AND FUNCTIONAL DISABILITY</a>	Recruiting	No Results Available	•Osteo Arthritis Knee •Sarcopenia	•Other: HIGH INTENSITY PROGRESSIVE RESISTED EXERCISE •Other: LOW INTENSITY PROGRESSIVE RESISTED EXERCISE	•University of Lahore Teaching Hospital, Lahore, Punjab, Pakistan
20	<a href="#">Multidisciplinary Research into the Effects of Resistance Exercise and Whey Protein Supplementation in Healthy Older Men</a>	Completed	No Results Available	•Sarcopenia •Muscle Atrophy	•Dietary Supplement: Whey Protein •Dietary Supplement: Control •Other: Resistance Exercise	•Coventry University, Coventry, West Midlands, United Kingdom
21	<a href="#">Protein Timing, Lean Mass, Strength and Functional Capacity Gains in Postmenopausal Women</a>	Completed	No Results Available	•Sarcopenia	•Dietary Supplement: Protein and carbohydrate supplementation	•Erick P. de Oliveira, Uberlândia, Minas Gerais, Brazil
22	<a href="#">Effect of Exercise and Protein Supplementation on Muscle Function in Patients With Hemodialysis</a>	Completed	No Results Available	•Sarcopenia	•Other: exercise and nutritional support	•Chungnam National University Hospital, Daejeon, Korea, Republic of
23	<a href="#">Sarcopenia Prevention With a Targeted Exercise and Protein Supplementation Program</a>	Recruiting	No Results Available	•Sarcopenia •Frailty •Malnutrition; Protein •Fall	•Dietary Supplement: Protein Supplement •Dietary Supplement: Protein-free Supplement •Procedure: Active Exercise •Procedure: Control Exercise	•Centre on Aging and Mobility, University of Zurich and City Hospital Waid and Triemli, Zurich, ZH, Switzerland •University Geriatric Medicine Felix Platter, Basel, Basel, Switzerland
24	<a href="#">Exercise Effects on Sarco-Osteopenia in Older Men</a>	Completed	No Results Available	•Sarcopenia •Osteopenia	•Other: exercise	•Institute of Medical Physics, University of Erlangen-Nürnberg, Germany, Erlangen, Germany
25	<a href="#">Implementing Resistance Exercise to Reduce Frailty for Older Adult</a>	Completed	No Results Available	•Sarcopenia	•Behavioral: Resistance exercise	•Northwestern University Department of Physical Therapy and Human Movement Sciences, Chicago, Illinois, United States
26	<a href="#">Sarcopenia, Mobility, Physical Activity and Post-operative Risk of Bladder Carcinoma in the Elderly</a>	Recruiting	No Results Available	•Sarcopenia •Bladder Cancer	•Diagnostic Test: sarcopenia and mobility measurement	•Caen University Hospital, Caen, France •APHM, Marseille, France •Rouen UH, Rouen, France
27	<a href="#">Multidimensional Intervention in Pre-frail Patients Older Than 70 Years</a>	Recruiting	No Results Available	•Frail Elderly Syndrome •Sarcopenia	•Behavioral: Intensive dietary advice and exercise prescription •Behavioral: Usual dietary advice and exercise prescription	•Cristina Gutiérrez-Lora, Medina del Campo, Valladolid, Spain
28	<a href="#">Vitality Acupunch Exercise Program for Sarcopenia Older Adults</a>	Completed	No Results Available	•Activities of Daily Living •Functional Fitness	•Other: Vitality acupunch (VA) exercise program •Other: Control	•Kaohsiung Medical University, Kaohsiung, Taiwan
29	<a href="#">Vitality Acupunch Exercise Program for Older Adults With Sarcopenia</a>	Completed	No Results Available	•Muscle Mass •Muscle Strength •Sleep Quality	•Other: Vitality acupunch (VA) exercise program •Other: Control	•Kaohsiung Medical University, Kaohsiung, Taiwan

- Page 2 of 8 -

Title	Status	Study Results	Conditions	Interventions	Locations
<a href="#">Exercise Intervention - and Impact on Hospitalization</a>	Terminated	No Results Available	•Sarcopenia •Debility Due to Disease	•Behavioral: exercise •Other: placebo	•Mayo Clinic in Arizona, Scottsdale, Arizona, United States •Mayo Clinic in Florida, Jacksonville, Florida, United States •Mayo Clinic in Rochester, Rochester, Minnesota, United States
<a href="#">A Randomized Control Trial of an Intervention to Reverse Frailty and Enhance Resilience Through Exercise and Education</a>	Completed	No Results Available	•Frailty •Sarcopenia	•Other: Exercise and protein	•Beechlaun Medical Centre, Dublin, Ireland
<a href="#">Sarcopenia and Risk of Falls in Patients With Major Chronic Diseases</a>	Recruiting	No Results Available	•Stroke •Osteoporosis •Chronic Kidney Diseases •Cancer	•Behavioral: elastic band strengthening exercise •Dietary Supplement: diet counseling	•Changhua Christian Hospital, Changhua, Taiwan
<a href="#">Osteosarcopenia and Exercise</a>	Completed	No Results Available	•Sarcopenia •Osteoporosis, Osteopenia	•Other: exercise	•#İflî Hamidiye Etfal Training and Research Hospital, Istanbul, Turkey
<a href="#">Exercise and Nutrition for Healthy Ageing</a>	Recruiting	No Results Available	•Sarcopenia	•Behavioral: Home-based training program •Dietary Supplement: High-quality protein supplement •Dietary Supplement: Omega-3 fatty acid •Drug: Placebo protein powder •Drug: Placebo omega-3	•Gerontology and Geriatrics, Department of Public Health and Primary Care, KU Leuven, Leuven, Vlaams-Brabant, Belgium
<a href="#">Early Detection of Disability and Health Promotion for Community-dwelling Elderly</a>	Unknown status	No Results Available	•Elderly •Sarcopenia	•Other: exercise training	

36	<a href="#">Effects of Eccentric Training Intervention in Older Adults</a>	Unknown status	No Results Available	•Sarcopenia	•Device: Eccentric exercise •Device: Conventional resistance exercise	•Seoul National University Bundang Hospital, Seongnam, Gyeonggi, Korea, Republic of
37	<a href="#">Reversing Muscle Loss With Exercise Training and Daily Consumption of Pomegranate Juice</a>	Completed	No Results Available	•Sarcopenia •Cardiovascular Risk Factor	•Other: Inertial Load Cycling Training •Dietary Supplement: Pomegranate Juice •Dietary Supplement: Placebo	•Human Performance Laboratory, Austin, Texas, United States
38	<a href="#">Effects of 12-Weeks of Quantitative Weight-bearing Progressive Resistance Exercise Training on Glycemia Control and Improving Muscle Strength With Type 2 Diabetes Combine Pre-sarcopenia.</a>	Completed	No Results Available	•Twelve Week Quantitative Weight Bearing of Resistance Training Effect on Glycemic Control and Muscle Strength	•Behavioral: Quantitative weight-bearing and report exercise sign data every weekly	•Yu-Hsuan Chien, Kaohsiung, Taiwan
39	<a href="#">Exercise and Nutritional Supplementation</a>	Unknown status	No Results Available	•Sarcopenia •Healthy Elderly •Healthy Young	•Dietary Supplement: multi-nutrient supplement •Other: Exercise	•McMaster University Medical Center, Hamilton, Ontario, Canada
40	<a href="#">Preventing Bed-rest Induced Muscle Loss in the Elderly</a>	Completed	No Results Available	•Muscle Loss •Disuse Atrophy •Protein Metabolism •Prehabilitation •Sarcopenia	•Other: Resistance exercise	•University of Birmingham, School of Sport, Exercise and Rehabilitation Sciences, Edgbaston, West Midlands, United Kingdom
41	<a href="#">Relative Sarcopenia and Cardiometabolic Risk in Young Adults With Obesity</a>	Recruiting	No Results Available	•Overweight and Obesity •Insulin Resistance	•Procedure: Cardiopulmonary exercise test (CPET)	•Massachusetts General Hospital, Boston, Massachusetts, United States
42	<a href="#">The Urinary Incontinence Treatment Study</a>	Completed	No Results Available	•Urinary Incontinence •Sarcopenia	•Behavioral: Pelvic floor muscle exercise	•Wake Forest Baptist Health, Winston-Salem, North Carolina, United States

- Page 3 of 8 -

Title	Status	Study Results	Conditions	Interventions	Locations
43 <a href="#">Physical Fitness, Body Composition and Frailty in Elderly People: Exercise Program Effects. EXERNET Elder 3.0</a>	Completed	No Results Available	•Frail Elderly Syndrome •Sarcopenia •Physical Activity	•Behavioral: Multicomponent exercise programme	•Universidad de Zaragoza, Zaragoza, Spain
44 <a href="#">Exercise and the Sleep for the Sarcopenic Elderly</a>	Completed	No Results Available	•Sarcopenia •Sleep •Physical Activity	•Other: Sleep •Other: Resistance Exercise	•UNIFESP, Sao Paulo, São Paulo, Brazil
45 <a href="#">Sarcopenia, Active Aging and Oral Microbiota: Effects of HIIT in Older Adults</a>	Active, not recruiting	No Results Available	•Sarcopenia	•Other: HIIT •Other: MICT	•Pabellón Municipal Dani Pacheco, Pizarra, Málaga, Spain
46 <a href="#">Identifying Therapeutic Targets of Accelerated Sarcopenia</a>	Recruiting	No Results Available	•Sarcopenia •Diabetes Mellitus •Aging	•Behavioral: Resistance exercise training •Behavioral: Bed rest •Behavioral: Intensive physical therapy	•Sealy Center on Aging, University of Texas Medical Branch, Galveston, Texas, United States
47 <a href="#">Resistance Exercise Training at Different Intensities</a>	Completed	No Results Available	•Sarcopenia •Frailty •Aging	•Behavioral: Low Load Resistance exercise •Behavioral: High Load Resistance exercise	•GRI Clinical Research Facility, Glasgow, United Kingdom
48 <a href="#">Mycoprotein as the Basis of a Sustainable Diet to Support Muscle Mass Maintenance and Reconditioning in Older Adults.</a>	Completed	No Results Available	•Aging •Sarcopenia	•Other: Protein, calorie and macronutrient controlled diet, derived from either omnivorous or non-animal sources, alongside unilateral resistance exercise, over a three-day period.	•University of Exeter, Exeter, Devon, United Kingdom
49 <a href="#">Muscular Rehabilitation by Eccentric Exercise After Severe COVID-19 Infection</a>	Recruiting	No Results Available	•Covid19 •Sarcopenia •Muscle Weakness	•Other: Rehabilitation by Eccentric exercises •Other: Rehabilitation by Concentric exercises	•CHU de Clermont-Ferrand, Clermont-Ferrand, France •CHU de Dijon, Dijon, France •CHU de Saint-Etienne, Saint-Etienne, France
50 <a href="#">Efficacy and Safety of Testosterone Therapy in Improving Sarcopenia in Men With Cirrhosis.</a>	Unknown status	No Results Available	•Liver Cirrhosis	•Drug: Testosterone Supplementation •Drug: Standard Medical Treatment •Other: Exercise	•Institute of Liver & Biliary Sciences, New Delhi, Delhi, India
51 <a href="#">Effects of Variable Load Exercise on Aging Atrophy</a>	Unknown status	No Results Available	•Sarcopenia •Hypertension •Muscle Atrophy	•Device: Variable load exercise	•University of Primorska, Koper, Slovenia •ZRS Koper, Koper, Slovenia
52 <a href="#">Improving Muscle Strength, Mass and Physical Function in Older Adults</a>	Unknown status	No Results Available	•Muscle Weakness •Fall •Sarcopenia	•Behavioral: Functional resistance exercise	•Livsmedicin (LIFE), Umeå, Västerbotten, Sweden

53	<a href="#">VR vs. Conventional Cycling Exercise for Geriatric Inpatient Physical Activation</a>	Not yet recruiting	No Results Available	<ul style="list-style-type: none"> <li>Inactivity, Physical</li> <li>Treatment Adherence and Compliance</li> <li>Hospital Acquired Condition</li> <li>Sarcopenia</li> </ul>	<ul style="list-style-type: none"> <li>Device: Virtual reality cycling exercise</li> <li>Behavioral: Unsupervised stationary cycling exercise</li> </ul>	Bispebjerg Geriatric Ward, Bispebjerg, Denmark
54	<a href="#">Beta-Hydroxy-Beta-Methylbutyrate Supplementation and Physical Activity in Liver Cirrhosis: a Controlled Trial</a>	Unknown status	No Results Available	<ul style="list-style-type: none"> <li>Sarcopenia</li> <li>Cirrhosis, Liver</li> </ul>	<ul style="list-style-type: none"> <li>Dietary Supplement: BETA-HYDROXY-BETA-METHYLBUTYRATE (HMB)</li> <li>Dietary Supplement: Mannitol</li> </ul>	Gastroenterology Department, Sapienza University of Rome, Rome, Italy
55	<a href="#">Dual-benefits of Aerobic and Resistance Training</a>	Suspended	No Results Available	<ul style="list-style-type: none"> <li>Sarcopenia</li> <li>Aging</li> <li>Disability Physical</li> </ul>	<ul style="list-style-type: none"> <li>Behavioral: Resistance Training</li> <li>Behavioral: Moderate-Intensity Continuous Cycling</li> <li>Behavioral: High-Intensity Interval Cycling</li> </ul>	Ohio University, Athens, Ohio, United States

- Page 4 of 8 -

	Title	Status	Study Results	Conditions	Interventions	Locations
56	<a href="#">Starting a Testosterone and Exercise Program After Hip Injury</a>	Recruiting	No Results Available	<ul style="list-style-type: none"> <li>Hip Fracture</li> <li>Frailty</li> <li>Sarcopenia</li> </ul>	<ul style="list-style-type: none"> <li>Drug: Testosterone</li> <li>Drug: Placebo gel</li> <li>Behavioral: Supervised exercise training</li> <li>Behavioral: Home exercise program</li> <li>Behavioral: Health Education Modules</li> </ul>	<ul style="list-style-type: none"> <li>University of Colorado, Denver, Aurora, Colorado, United States</li> <li>University of Connecticut Health - UConn Health, Farmington, Connecticut, United States</li> <li>University of Maryland School of Medicine/Johns Hopkins University, Baltimore, Maryland, United States</li> <li>HebrewSenior Life Harvard Medical School, Roslindale, Massachusetts, United States</li> <li>Washington University School of Medicine in St. Louis, Saint Louis, Missouri, United States</li> <li>University of Pittsburgh Medical Center, Pittsburgh, Pennsylvania, United States</li> <li>University of Texas Medical Branch at Galveston (UTMB), Galveston, Texas, United States</li> <li>University of Utah, Salt Lake City, Utah, United States</li> </ul>
57	<a href="#">Effect of Incorporating Lean Beef Into a Protein-rich Diet During Resistance Training on Muscle and Tendon Strength in Older Women</a>	Recruiting	No Results Available	<ul style="list-style-type: none"> <li>Sarcopenia</li> <li>Aging</li> </ul>	<ul style="list-style-type: none"> <li>Other: Exercise training</li> </ul>	<ul style="list-style-type: none"> <li>Purdue University, West Lafayette, Indiana, United States</li> </ul>
58	<a href="#">Frailty Care and eHealth-function in Community Dwelling Older Adults</a>	Unknown status	No Results Available	<ul style="list-style-type: none"> <li>Frailty</li> <li>Sarcopenia</li> <li>Aging</li> </ul>	<ul style="list-style-type: none"> <li>Behavioral: Consultation</li> <li>Behavioral: Online Support</li> <li>Behavioral: Empowered</li> </ul>	<ul style="list-style-type: none"> <li>Aberystwyth University, Aberystwyth, Ceredigion, United Kingdom</li> </ul>
59	<a href="#">Oral 'Breath Test' to Measure Anabolic Sensitivity in Young and Older Adults at Different Activity Levels</a>	Recruiting	No Results Available	<ul style="list-style-type: none"> <li>Sedentary Behavior</li> <li>Aging</li> <li>Sarcopenia</li> <li>Amino Acids</li> <li>Dietary Protein</li> </ul>	<ul style="list-style-type: none"> <li>Behavioral: Habitual Physical Activity</li> <li>Behavioral: Step-Reduction</li> </ul>	<ul style="list-style-type: none"> <li>Goldring Centre for High Performance Sport at the University of Toronto, Toronto, Ontario, Canada</li> </ul>
60	<a href="#">Effect of Protein Consumption and Resistance Training on Body Composition, Muscular Strength and Functional Capacity in the Elderly</a>	Completed	No Results Available	<ul style="list-style-type: none"> <li>Elderly</li> <li>Sarcopenia</li> </ul>	<ul style="list-style-type: none"> <li>Dietary Supplement: Exercise training + whey protein</li> <li>Other: Exercise training + placebo (maltoedextrin)</li> </ul>	<ul style="list-style-type: none"> <li>Federal University of Health Sciences, Porto Alegre, Rio Grande Do Sul, Brazil</li> </ul>
61	<a href="#">Physical Exercise, Nutrition Supplement and Frailty of Older Population</a>	Completed	No Results Available	<ul style="list-style-type: none"> <li>Sarcopenia</li> <li>Physical Exercise</li> <li>Nutrition Poor</li> <li>Elderly</li> </ul>	<ul style="list-style-type: none"> <li>Behavioral: individual physical exercise group</li> <li>Dietary Supplement: individual Branched-Chain Amino Acids supplements group</li> <li>Other: combination of physical exercise and nutrition supplements group</li> </ul>	<ul style="list-style-type: none"> <li>Taipei Medical University, Taipei, Taiwan</li> </ul>
62	<a href="#">Efficacy of the Consumption of a Spinach Extract on Muscle Function in Subjects Over 50 Years of Age</a>	Completed	No Results Available	<ul style="list-style-type: none"> <li>Sarcopenia</li> <li>Physical Exercise</li> </ul>	<ul style="list-style-type: none"> <li>Dietary Supplement: Dietary supplement consumption and physical exercise</li> </ul>	<ul style="list-style-type: none"> <li>Catholic University of Murcia, Murcia, Spain</li> </ul>
63	<a href="#">Vitamin D and Resistance Exercise Training: Effects on Musculoskeletal Health in Frail Older Men and Women</a>	Completed	No Results Available	<ul style="list-style-type: none"> <li>Sarcopenia</li> <li>Muscle Atrophy</li> <li>Osteoporosis</li> </ul>	<ul style="list-style-type: none"> <li>Other: RET</li> <li>Dietary Supplement: Placebo</li> <li>Dietary Supplement: Vitamin D3</li> </ul>	<ul style="list-style-type: none"> <li>University of Birmingham, Birmingham, United Kingdom</li> </ul>
64	<a href="#">Feasibility of a Novel Resistance Exercise in Individuals With Osteoporosis</a>	Not yet recruiting	No Results Available	<ul style="list-style-type: none"> <li>Osteopenia</li> <li>Osteoporosis</li> <li>Postmenopausal Osteoporosis</li> <li>Sarcopenia</li> </ul>	<ul style="list-style-type: none"> <li>Other: Exercise training</li> </ul>	<ul style="list-style-type: none"> <li>University of Alabama at Birmingham, Birmingham, Alabama, United States</li> </ul>

Title	Status	Study Results	Conditions	Interventions	Locations
65 <a href="#">Successful Aging and Frailty</a>	Recruiting	No Results Available	<ul style="list-style-type: none"> <li>•Frailty Syndrome</li> <li>•Cognitive Impairment</li> <li>•Sarcopenia</li> </ul>	<ul style="list-style-type: none"> <li>•Other: Exercise Training</li> <li>•Other: Exercise Training + Cognitive Training</li> <li>•Other: Control</li> </ul>	<ul style="list-style-type: none"> <li>•University of Verona, Verona, Italy</li> </ul>
66 <a href="#">Integrated Physical Training With Protein Diet in Older Adults With Sarcopenia Symptoms</a>	Completed	Has Results	<ul style="list-style-type: none"> <li>•Sarcopenia</li> </ul>	<ul style="list-style-type: none"> <li>•Other: Physical training and high protein diet</li> <li>•Other: Physical training and low protein diet</li> </ul>	<ul style="list-style-type: none"> <li>•Dr. Gopal Nambi, Al Khair, Riyadh, Saudi Arabia</li> </ul>
67 <a href="#">Dietary Supplementation With Omega-3 Fatty Acid in Muscle Response</a>	Unknown status	No Results Available	<ul style="list-style-type: none"> <li>•Elderly Women</li> <li>•Sarcopenia</li> </ul>	<ul style="list-style-type: none"> <li>•Drug: Fish oil</li> <li>•Drug: sunflower oil</li> </ul>	<ul style="list-style-type: none"> <li>•Clinics Hospital of the Ribeirao Preto Medical School Ribeirao Preto, Ribeirao Preto, SP, Brazil</li> </ul>
68 <a href="#">Effects of Resistance Training on Physical Performance, Health and Quality of Life in Elderly (RTHealth)</a>	Completed	No Results Available	<ul style="list-style-type: none"> <li>•Sarcopenia</li> <li>•Body Weight Changes</li> <li>•Quality of Life</li> </ul>	<ul style="list-style-type: none"> <li>•Other: Exercise test</li> </ul>	<ul style="list-style-type: none"> <li>•Pablo Jorge Marcos Pardo, Murcia, Spain</li> </ul>
69 <a href="#">Frailty in Patients With Cirrhosis: Prognostic Value of the Phase Angle in Hospitalized Patients and Effect of Multifactorial Intervention</a>	Recruiting	No Results Available	<ul style="list-style-type: none"> <li>•Cirrhosis of the Liver</li> <li>•Sarcopenia</li> <li>•Frailty Syndrome</li> </ul>	<ul style="list-style-type: none"> <li>•Combination Product: Home exercise program for 12 months.</li> <li>•Combination Product: Multispecies probiotic: Vivomixx®</li> <li>•Combination Product: Branched-chain amino acids (BCAA)</li> <li>•Combination Product: No specific intervention.</li> </ul>	<ul style="list-style-type: none"> <li>•Hospital de la Santa Creu i Sant Pau, Barcelona, Spain</li> <li>•Hospital de la Santa Creu i Sant Pau, Barcelona, Spain</li> </ul>
70 <a href="#">Resistance Exercise and Low-Intensity Physical Activity Breaks in Sedentary Time to Improve Muscle and Cardiometabolic Health</a>	Recruiting	No Results Available	<ul style="list-style-type: none"> <li>•Aging</li> <li>•Sarcopenia</li> <li>•Disability Physical</li> <li>•Cardiovascular Diseases</li> <li>•Insulin Resistance</li> <li>•Diabetes Mellitus</li> </ul>	<ul style="list-style-type: none"> <li>•Behavioral: Exercise Intervention</li> </ul>	<ul style="list-style-type: none"> <li>•Louisiana State University, Baton Rouge, Louisiana, United States</li> <li>•Pennington Biomedical Research Center, Baton Rouge, Louisiana, United States</li> </ul>
71 <a href="#">Impact of Whole-body Vibration Training on Sarcopenic Elderly</a>	Recruiting	No Results Available	<ul style="list-style-type: none"> <li>•Sarcopenia</li> </ul>	<ul style="list-style-type: none"> <li>•Device: whole body vibration plus conventional therapy</li> <li>•Procedure: conventional therapy</li> </ul>	<ul style="list-style-type: none"> <li>•Seoul National University Bundang Hospital, Seongnam, Gyeonggi, Korea, Republic of</li> </ul>
72 <a href="#">Effectiveness of Focal Vibration and Blood Flow Restriction Within a Multicomponent Exercise Programme</a>	Not yet recruiting	No Results Available	<ul style="list-style-type: none"> <li>•Sarcopenia</li> <li>•Occlusion</li> <li>•Vibration: Exposure</li> <li>•Old Age: Atrophy</li> <li>•Exercise Addiction</li> </ul>	<ul style="list-style-type: none"> <li>•Other: Focal Vibration</li> <li>•Other: Blood Flow Restriction</li> <li>•Other: Traditional Training</li> </ul>	<ul style="list-style-type: none"> <li>•Universitat Internacional de Catalunya, Sant Cugat Del Valles, Barcelona, Spain</li> </ul>
73 <a href="#">Pulmonary Rehabilitation in End-Stage Liver Disease</a>	Recruiting	No Results Available	<ul style="list-style-type: none"> <li>•End Stage Liver Disease</li> </ul>	<ul style="list-style-type: none"> <li>•Behavioral: Pulmonary Rehabilitation Exercise</li> <li>•Behavioral: Home Based Exercise</li> </ul>	<ul style="list-style-type: none"> <li>•Mayo Clinic in Rochester, Rochester, Minnesota, United States</li> </ul>
74 <a href="#">The Impact of a Resistance Training Intervention on Blood Pressure Control in Older Adults With Sarcopenia</a>	Recruiting	No Results Available	<ul style="list-style-type: none"> <li>•Sarcopenia</li> <li>•High Blood Pressure</li> <li>•Hypertension</li> </ul>	<ul style="list-style-type: none"> <li>•Behavioral: progressive resistance training</li> </ul>	<ul style="list-style-type: none"> <li>•University of Illinois at Chicago, Chicago, Illinois, United States</li> </ul>
75 <a href="#">Prehabilitation for Cardiac Surgery in Patients With Reduced Exercise Tolerance</a>	Recruiting	No Results Available	<ul style="list-style-type: none"> <li>•Sarcopenia</li> <li>•Exercise Intolerance</li> <li>•Heart Failure</li> <li>•Peripheral Artery Disease</li> </ul>	<ul style="list-style-type: none"> <li>•Device: Neuromuscular electrical stimulation (NMES)</li> <li>•Device: Transcutaneous electrical stimulation</li> </ul>	<ul style="list-style-type: none"> <li>•Research Institute for Complex Issues of Cardiovascular Diseases, Kemerovo, Russian Federation</li> </ul>

- Page 6 of 8 -

Title	Status	Study Results	Conditions	Interventions	Locations
76 <a href="#">Time Course Adaptations Using Deuterated Creatine (D3C) Method</a>	Active, not recruiting	No Results Available	<ul style="list-style-type: none"> <li>•Sarcopenia</li> </ul>	<ul style="list-style-type: none"> <li>•Behavioral: Resistance Training</li> <li>•Behavioral: Successful Aging</li> </ul>	<ul style="list-style-type: none"> <li>•UF Health at the University of Florida, Gainesville, Florida, United States</li> <li>•UF Institute on Aging Clinical and Translational Research Building, Gainesville, Florida, United States</li> </ul>
77 <a href="#">Protein Supplementation and Muscle Function in the Elderly</a>	Unknown status	No Results Available	<ul style="list-style-type: none"> <li>•Sarcopenia</li> </ul>	<ul style="list-style-type: none"> <li>•Dietary Supplement: Group 2</li> <li>•Other: Group 1</li> </ul>	<ul style="list-style-type: none"> <li>•Hospital Santiago Apostol, Vitoria-Gasteiz, Alava, Spain</li> </ul>
78 <a href="#">Effects of High-velocity Resistance Training and Creatine Supplementation in Healthy Aging Males</a>	Unknown status	No Results Available	<ul style="list-style-type: none"> <li>•Sarcopenia</li> </ul>	<ul style="list-style-type: none"> <li>•Drug: Creatine monohydrate</li> <li>•Drug: Maltodextrin Powder</li> </ul>	<ul style="list-style-type: none"> <li>•University of Regina, Regina, Saskatchewan, Canada</li> </ul>
79 <a href="#">Effect of Whey Protein' Supplementation and Exercise in Patients With Heart Failure</a>	Unknown status	No Results Available	<ul style="list-style-type: none"> <li>•Heart Failure</li> <li>•Sarcopenia</li> <li>•Muscle Loss</li> </ul>	<ul style="list-style-type: none"> <li>•Dietary Supplement: whey protein</li> </ul>	<ul style="list-style-type: none"> <li>•Elsa Maia dos Santos, Rio de Janeiro, Brazil</li> </ul>

80	<a href="#">Balance Training for Sarcopenic Inpatients Aged 80+ Years</a>	Completed	No Results Available	•Sarcopenia	•Behavioral: balance training •Behavioral: resistance training	•West China Hospital/Sichuan University, Chengdu, Sichuan, China
81	<a href="#">Feasibility Study of a Post-hospitalization Self-rehabilitation Program for Elderly Suffering of Sarcopenia</a>	Unknown status	No Results Available	•Sarcopenia	•Behavioral: Self-rehabilitation program and protein supplement	•Institut Mutualiste Montsouris, Paris, France
82	<a href="#">Efficacy of an Intervention to Prevent Frailty in Obese Elderly People (PRE-FROB)</a>	Completed	No Results Available	•Frailty •Sarcopenia •Obese •Elderly	•Other: Intervention	•Consorti Sanitari del Maresme, Mataró, Barcelona, Spain
83	<a href="#">Low Versus High-Intensity Aerobic Training in Community-dwelling Older Men With Post-COVID-19 (SARS-CoV-2) Sarcopenia</a>	Completed	No Results Available	•Sarcopenia	•Other: low-intensity aerobic training	•Marwa Eld, Cairo, Egypt
84	<a href="#">Bingocize: A Novel Mobile Application for Older Adult Health</a>	Recruiting	No Results Available	•Activities of Daily Living •Accidental Fall •Sarcopenia •Arteriosclerosis •Diabetes Mellitus, Type 2 •Hypertension •Cognitive Decline •Executive Function •Cognitive Aging	•Behavioral: Socially-Based Exercise Intervention for Older Adults	•Webster County Senior Center, Dixon, Kentucky, United States •Chester County Senior Center, Henderson, Tennessee, United States •Johnson County Senior Center, Johnson City, Tennessee, United States •Scotts Hill Senior Center, Scotts Hill, Tennessee, United States
85	<a href="#">Bariatric-metabolic Surgery - the Effect of Postoperative Exercising on Sarcopenia</a>	Not yet recruiting	No Results Available	•Sarcopenia •Obesity •Sarcopenic Obesity	•Procedure: Laparoscopic sleeve gastrectomy •Other: Strength endurance training	
86	<a href="#">The Early Strength Training Program in Post-transplant Liver Cases</a>	Completed	No Results Available	•End Stage Liver Disease •Chronic Liver Failure •Liver Transplant Disorder •Muscle Loss •Muscle Weakness •Sarcopenia •Fatigue •Quality of Life	•Behavioral: Strength Exercise Training	•Memorial Hospital Groups, Istanbul, Turkey

- Page 7 of 8 -

Title	Status	Study Results	Conditions	Interventions	Locations
87 <a href="#">Characterization of the Nutritional Status in the Patient With Liver Cirrhosis</a>	Completed	No Results Available	•Sarcopenia	•Dietary Supplement: Branched chain amino acids (BRCA)	•Jose Luis Calleja, Majadahonda, Madrid, Spain
88 <a href="#">Effectiveness of Interactive Exergame in Older Adults With Sarcopenia</a>	Recruiting	No Results Available	•Sarcopenia	•Other: Interactive Exergame	•Community daycare center, Taipei, Taiwan
89 <a href="#">Neuromuscular Electrical Stimulation and Physical Function in Older Adults</a>	Unknown status	No Results Available	•Sarcopenia	•Other: NMES-Millicurrent	
90 <a href="#">Sarcopenia in Older Patients in the Acute Hospital Setting</a>	Recruiting	No Results Available	•Sarcopenia •Frailty	•Device: Virtual Gate Device (VGD)	•Rambam Health Care Campus, Haifa, North, Israel
91 <a href="#">Investigation of Impacts of Vibration on Muscular Strength and Functional Performance of Upper Limbs of Older Adults</a>	Enrolling by invitation	No Results Available	•Sarcopenia	•Behavioral: vibration machine	•TMU, Taipei city, Taiwan
92 <a href="#">Lysosomal Movement and Anabolic Resistance</a>	Unknown status	No Results Available	•Sarcopenia	•Dietary Supplement: Essential amino acids	•School of Sport, Exercise and Rehabilitation Sciences at University of Birmingham, Birmingham, West Midlands, United Kingdom
93 <a href="#">Effects of Whey Protein Supplementation Collagen Associated to Resistance Training in Older Women</a>	Completed	No Results Available	•Sarcopenia •Collagen Degeneration	•Dietary Supplement: Whey protein plus collagen •Dietary Supplement: Whey protein plus maltodextrin	•Rodrigo dos Reis Fernandes, Londrina, PR, Brazil
94 <a href="#">Strength and Aerobic Training in Elderly Lymphoma Patients During Chemotherapy and Its Impact on Treatment Outcomes, Patients Functioning and Biological Markers of Aging</a>	Unknown status	No Results Available	•Strength Aerobic Training Elderly Lymphoma Sarcopenia Aging	•Behavioral: physiotherapy	
95 <a href="#">Physical Rehabilitation and Chronic Kidney Disease</a>	Unknown status	No Results Available	•Sarcopenia •Chronic Kidney Disease •Older	•Behavioral: Physical rehabilitation	•Service de Médecine du vieillissement, soins de suite et de rééducation, Centre Hospitalier Lyon Sud, Pierre-Bénite, France •Service de Néphrologie, Centre Hospitalier Lyon Sud, Pierre-Bénite, France
96 <a href="#">Inflammaging and Muscle Protein Metabolism</a>	Completed	No Results Available	•Inflammaging •Sarcopenia	•Dietary Supplement: Instantized Whey Protein Isolate	•Exercise Biochemistry Laboratory, School of Physical Education & Sports Sciences, University of Thessaly, Trikala, Greece

97	<a href="#">The Whole Body Vibration for Sarcopenic Hospitalized Patients Aged 80+ Years</a>	Completed	No Results Available	•Sarcopenia	•Behavioral: the whole body vibration •Behavioral: resistance training	•West China Hospital/Sichuan University, Chengdu, Sichuan, China
98	<a href="#">Peanut Protein Supplementation to Augment Muscle Growth and Improve Markers of Muscle Quality and Health in Young Adults</a>	Completed	No Results Available	•Sarcopenia	•Dietary Supplement: Peanut protein powder •Behavioral: Full body resistance training	•Auburn University, Auburn, Alabama, United States
99	<a href="#">RELIEF - Resistance Training for Life</a>	Recruiting	No Results Available	•Sarcopenia	•Other: Progressive resistance training	•Inland Norway University of Applied Sciences, Lillehammer, Norway
100	<a href="#">Mediterranean Diet, Circuit Resistance Training, Empagliflozin in Elderly With Type 2 Diabetes: a Study Protocol</a>	Unknown status	No Results Available	•Diabetes Mellitus, Type 2 •Sarcopenia •Weight Loss •Frailty	•Behavioral: Circuit resistance training (CRT) •Behavioral: Vegeterranean diet (V-Med diet) •Drug: Empagliflozin 10 MG	•The Institute of Endocrinology Metabolism and Hypertension, Tel Aviv, Israel

28 additional studies not shown

ClinicalTrials.gov Search Results 03/16/2022

Title	Status	Study Results	Conditions	Interventions	Locations
<a href="#">Strength Training in Hospitalized Patients Using the Ghostly App: a Feasibility Study</a>	Not yet recruiting	No Results Available	<ul style="list-style-type: none"> <li>Stroke</li> <li>COVID-19</li> <li>Frailty</li> <li>Muscle Weakness</li> <li>Sarcopenia</li> </ul>	<ul style="list-style-type: none"> <li>Other: Ghostly app</li> <li>Other: Blood flow restriction</li> <li>Other: Leaflet</li> </ul>	<ul style="list-style-type: none"> <li>Vrije Universiteit Brussel, Jette, Brussels Hoofdstedelijk Gewest, Belgium</li> </ul>
<a href="#">Exercise Training and NR Supplementation Trial to Improve Fitness in AYA HCT Survivors</a>	Not yet recruiting	No Results Available	<ul style="list-style-type: none"> <li>Acute Lymphoblastic Leukemia in Remission</li> <li>Cancer Survivors</li> </ul>	<ul style="list-style-type: none"> <li>Dietary Supplement: Nicotinamide Riboside</li> <li>Dietary Supplement: Placebo</li> <li>Other: Exercise Intervention</li> </ul>	<ul style="list-style-type: none"> <li>City of Hope Medical Center, Duarte, California, United States</li> <li>Children's Hospital of Philadelphia, Philadelphia, Pennsylvania, United States</li> </ul>
<a href="#">An Integrated Solution for Sustainable Care for Multimorbid Elderly Patients With Dementia</a>	Not yet recruiting	No Results Available	<ul style="list-style-type: none"> <li>Comorbidities and Coexisting Conditions</li> <li>Alzheimer Disease</li> <li>Dementia</li> <li>Malnutrition</li> <li>Frailty</li> <li>Sarcopenia</li> <li>Stroke</li> <li>Asthma</li> <li>Chronic Obstructive Pulmonary Disease</li> <li>Chronic Kidney Diseases</li> <li>and 5 more</li> </ul>	<ul style="list-style-type: none"> <li>Other: Intervention tested (CAREPATH)</li> </ul>	<ul style="list-style-type: none"> <li>Complejo Hospitalario Universitario de Albacete, Albacete, Spain</li> </ul>
<a href="#">Physical Fitness Impact of Early Physiotherapy Intervention With a Standardized Exercise Therapy Program in Adult Patients Receiving Intensive Induction Chemotherapy for Treatment of Acute Leukemia During Extended Hospitalization</a>	Not yet recruiting	No Results Available	<ul style="list-style-type: none"> <li>Acute Leukemia</li> </ul>	<ul style="list-style-type: none"> <li>Other: KinHémo</li> </ul>	
<a href="#">The Effect of Exercise on Dialysis Patients' Survival</a>	Completed	No Results Available	<ul style="list-style-type: none"> <li>Kidney Disease, Chronic</li> <li>End Stage Renal Disease</li> <li>Hemodialysis</li> </ul>	<ul style="list-style-type: none"> <li>Other: Intradialytic Exercise</li> </ul>	<ul style="list-style-type: none"> <li>Abolfazl medical center, Isfahan, Iran, Islamic Republic of</li> <li>Pardis specialized wellness institute, Isfahan, Iran, Islamic Republic of</li> </ul>
<a href="#">Is NMES Treatment in Sepsis/ Septic Shock Patients Protective in Development of ICU-AW?</a>	Completed	No Results Available	<ul style="list-style-type: none"> <li>Intensive Care Unit Acquired Weakness</li> <li>Sepsis, Severe</li> </ul>	<ul style="list-style-type: none"> <li>Device: NMES GROUP</li> </ul>	<ul style="list-style-type: none"> <li>Ondokuz Mayıs University Faculty of Medicine, Samsun, Atakum, Turkey</li> </ul>
<a href="#">Evaluation of a Screening Strategy for Sarcopenia: a Monocentric Prospective Cohort Study (STRAS)</a>	Recruiting	No Results Available	<ul style="list-style-type: none"> <li>Sarcopenia</li> </ul>	<ul style="list-style-type: none"> <li>Procedure: Screening and diagnostic tests for sarcopenia</li> </ul>	<ul style="list-style-type: none"> <li>GHRMSA - Hôpital Emile MULLER, Mulhouse, France</li> </ul>
<a href="#">Effect of Protein Supplementation and a Structured Exercise Program on Muscle in Women After Bariatric Surgery</a>	Recruiting	No Results Available	<ul style="list-style-type: none"> <li>Sarcopenic Obesity</li> <li>Bariatric Surgery Candidate</li> <li>Nutritional Deficiency</li> <li>Protein Intolerance</li> </ul>	<ul style="list-style-type: none"> <li>Dietary Supplement: Protein Supplementation</li> </ul>	<ul style="list-style-type: none"> <li>Hospital Clinic Barcelona, Barcelona, Spain</li> </ul>
<a href="#">Multimodal Prehabilitation in Frail and Non-frail Patients Waiting for a Kidney Transplantation (the FRAILMAR Study)</a>	Recruiting	No Results Available	<ul style="list-style-type: none"> <li>Chronic Kidney Diseases</li> </ul>	<ul style="list-style-type: none"> <li>Other: Multimodal prehabilitation</li> </ul>	<ul style="list-style-type: none"> <li>Hospital del Mar, Barcelona, Catalonia, Spain</li> </ul>
<a href="#">A Randomized-Control Study of Gym Tonic's Community Based Strength Training Intervention</a>	Completed	No Results Available	<ul style="list-style-type: none"> <li>Frailty</li> <li>Muscle Loss</li> <li>Sarcopenia</li> </ul>	<ul style="list-style-type: none"> <li>Device: Gym Tonic programme and Gym equipment</li> </ul>	<ul style="list-style-type: none"> <li>PulseSync, Singapore, Singapore</li> </ul>

- Page 1 of 3 -

Title	Status	Study Results	Conditions	Interventions	Locations
<a href="#">Prader-Willi Syndrome Body Composition</a>	Recruiting	No Results Available	<ul style="list-style-type: none"> <li>Prader Labhart Willi Syndrome</li> <li>Body Weight Changes</li> <li>Sarcopenia</li> </ul>	<ul style="list-style-type: none"> <li>Other: Therapeutic elastic band resistance training</li> </ul>	<ul style="list-style-type: none"> <li>Taipei Tzu Chi Hospital, Buddhist Tzu Chi Medical Foundation, New Taipei City, Taiwan</li> </ul>
<a href="#">Preoperative Prehabilitation for Sarcopenic Patients Prior to Pancreatic Surgery for Cancer</a>	Not yet recruiting	No Results Available	<ul style="list-style-type: none"> <li>Sarcopenia</li> <li>Pancreatic Cancer</li> </ul>	<ul style="list-style-type: none"> <li>Other: Prehabilitation program</li> <li>Dietary Supplement: Oral Impact</li> </ul>	
<a href="#">Feasibility of an Adapted Physical Activity Program for Patients Treated With an Autograft (APA)</a>	Recruiting	No Results Available	<ul style="list-style-type: none"> <li>Myeloma</li> <li>Lymphoma</li> </ul>	<ul style="list-style-type: none"> <li>Other: Adapted Physical Activity</li> </ul>	<ul style="list-style-type: none"> <li>CHU, Angers, France</li> <li>Centre Jean Bernard/Clinique Victor Hugo, Le Mans, France</li> </ul>



14	<a href="#">A High-Protein Mediterranean Diet and Resistance Exercise for Cardiac Rehabilitation: a Pilot Randomised Controlled Trial</a>	Not yet recruiting	No Results Available	<ul style="list-style-type: none"> <li>Cardiovascular Diseases</li> <li>Sarcopenic Obesity</li> </ul>	<ul style="list-style-type: none"> <li>Other: High-Protein Mediterranean Diet</li> <li>Other: Resistance Exercise</li> <li>Other: Standard Dietary Advice</li> <li>Other: Standard Cardiac Rehabilitation Exercise</li> </ul>	
15	<a href="#">The Eggs and actiVity in hEalth aging Pilot (EVEN-PI) Trial in Older Persons</a>	Unknown status	No Results Available	<ul style="list-style-type: none"> <li>Aging</li> </ul>	<ul style="list-style-type: none"> <li>Behavioral: Exercise</li> <li>Behavioral: Exercise plus diet (egg)</li> </ul>	<ul style="list-style-type: none"> <li>Ivor Wynne Centre, Hamilton, Ontario, Canada</li> </ul>
16	<a href="#">Pedaling at a Low-Moderate Intensity During Chemotherapy Administration</a>	Enrolling by invitation	No Results Available	<ul style="list-style-type: none"> <li>Colorectal Cancer</li> <li>Exercise, Aerobic</li> <li>Chemotherapy</li> <li>Chemotherapeutic Toxicity</li> </ul>	<ul style="list-style-type: none"> <li>Behavioral: Pedaling</li> </ul>	<ul style="list-style-type: none"> <li>Rush University Medical Center, Chicago, Illinois, United States</li> </ul>
17	<a href="#">Muscle Multi-parametric NMR Imaging Development in Aged People With Sarcopenia or Frailty Syndrome: CLINICAL Study</a>	Recruiting	No Results Available	<ul style="list-style-type: none"> <li>Frail Elderly Syndrome</li> <li>Diabetes</li> </ul>	<ul style="list-style-type: none"> <li>Diagnostic Test: Nuclear magnetic resonance (NMR)</li> </ul>	<ul style="list-style-type: none"> <li>Service de Médecine Gériatrique, CHU de LIMOGES, Limoges, France</li> <li>Service de gériatrie - CHU Bordeaux - hôpital Xavier Arnoz, Pessac, France</li> </ul>
18	<a href="#">Beet Function of Range of Motion (eRCT)</a>	Recruiting	No Results Available	<ul style="list-style-type: none"> <li>Mobility</li> </ul>	<ul style="list-style-type: none"> <li>Behavioral: Multimodal exercise program</li> <li>Behavioral: Usual Care</li> </ul>	<ul style="list-style-type: none"> <li>Department of Prevention, Rehabilitation and Sports Medicine, Faculty of Medicine, Technical University of Munich, Munich, Bavaria, Germany</li> </ul>
19	<a href="#">Low-moderate Intensity Pedaling During Immunotherapy Administration</a>	Unknown status	No Results Available	<ul style="list-style-type: none"> <li>Cancer of Skin</li> <li>Cancer of Kidney</li> <li>Cancer of Bladder</li> <li>Exercise, Aerobic</li> <li>Immunotherapy</li> </ul>	<ul style="list-style-type: none"> <li>Behavioral: Pedaling Group</li> </ul>	<ul style="list-style-type: none"> <li>Rush University Medical Center, Chicago, Illinois, United States</li> </ul>
20	<a href="#">Peanut Protein Supplementation to Augment Muscle Growth and Improve Markers of Muscle Quality and Health in Older Adults</a>	Completed	No Results Available	<ul style="list-style-type: none"> <li>Aging</li> <li>Sarcopenia</li> </ul>	<ul style="list-style-type: none"> <li>Dietary Supplement: Peanut Protein Powder</li> <li>Behavioral: Full body resistance training</li> </ul>	<ul style="list-style-type: none"> <li>Auburn University, Auburn, Alabama, United States</li> </ul>
21	<a href="#">Effects of a Weight Based Training Program on MS Patients</a>	Unknown status	No Results Available	<ul style="list-style-type: none"> <li>Multiple Sclerosis</li> </ul>	<ul style="list-style-type: none"> <li>Behavioral: Bodyweight training</li> </ul>	<ul style="list-style-type: none"> <li>Holy Name Medical Center, Teaneck, New Jersey, United States</li> </ul>
22	<a href="#">Evaluation of the Healthy Lifestyle Program on Cognitive Outcomes</a>	Active, not recruiting	No Results Available	<ul style="list-style-type: none"> <li>Obesity</li> </ul>	<ul style="list-style-type: none"> <li>Behavioral: Evaluate Healthy Lifestyle Program on cognitive outcomes</li> </ul>	<ul style="list-style-type: none"> <li>Dartmouth-Hitchcock Medical Center, Lebanon, New Hampshire, United States</li> </ul>
23	<a href="#">Whey Protein Supplementation and Resistance Training in Older Women With Sarcopenic Obesity</a>	Completed	No Results Available	<ul style="list-style-type: none"> <li>Body Weight</li> <li>Healthy</li> </ul>	<ul style="list-style-type: none"> <li>Dietary Supplement: whey protein</li> <li>Dietary Supplement: placebo</li> </ul>	<ul style="list-style-type: none"> <li>Hellen Clair Garcez Nabuco, Cuiabá, Mount, Brazil</li> </ul>
24	<a href="#">Enhancing Functional Capacity in Older Adults With Short Session High Intensity Interval Training</a>	Active, not recruiting	No Results Available	<ul style="list-style-type: none"> <li>Frailty</li> </ul>	<ul style="list-style-type: none"> <li>Behavioral: Short session HIIT</li> </ul>	<ul style="list-style-type: none"> <li>VA Western New York Healthcare System, Buffalo, NY, Buffalo, New York, United States</li> </ul>

- Page 2 of 3 -

Title	Status	Study Results	Conditions	Interventions	Locations
<a href="#">Effects of Resistance Training With High vs. Light-moderate Loads on Muscle-tendon Function in the Elderly</a>	Completed	No Results Available	<ul style="list-style-type: none"> <li>Aging</li> <li>Sarcopenia</li> <li>Frail Elderly Syndrome</li> </ul>	<ul style="list-style-type: none"> <li>Behavioral: High Intensity resistance training (12 weeks)</li> <li>Behavioral: Light-moderate intensity resistance training (12 weeks)</li> <li>Behavioral: Control (12 weeks)</li> <li>Behavioral: One High Intensity resistance training session</li> <li>Behavioral: One Light-moderate intensity resistance training session</li> </ul>	<ul style="list-style-type: none"> <li>Universidad de Castilla-La Mancha, Laboratorio de Actividad Física y Función Muscular, Campus de la Fábrica de Armas, Avda. Carlos III s/n, Toledo, Spain</li> </ul>
<a href="#">Electrical Stimulation of Human Myocytes in Microgravity</a>	Active, not recruiting	No Results Available	<ul style="list-style-type: none"> <li>Sarcopenia</li> </ul>	<ul style="list-style-type: none"> <li>Procedure: Muscle Tissue Biopsy</li> <li>Other: Maximal Oxygen Consumption (VO2max)</li> </ul>	<ul style="list-style-type: none"> <li>Translational Research Institute for Metabolism and Diabetes, Olatando, Florida, United States</li> </ul>
<a href="#">Prehabilitation Intervention to Maximize Early Recovery (PRIMER) in Liver Transplantation</a>	Active, not recruiting	No Results Available	<ul style="list-style-type: none"> <li>Liver Diseases</li> <li>End Stage Liver Disease</li> <li>Frailty</li> </ul>	<ul style="list-style-type: none"> <li>Device: Nokia GO Wearable StepTracker</li> <li>Other: Medication Reminder</li> <li>Other: Weekly Check-in appointment with study team or provider</li> </ul>	<ul style="list-style-type: none"> <li>Perelman Center for Advanced Medicine, Philadelphia, Pennsylvania, United States</li> </ul>
<a href="#">Progressive Rehabilitation Therapy in Patients With Advanced Lung Disease</a>	Active, not recruiting	No Results Available	<ul style="list-style-type: none"> <li>Advanced Lung Disease</li> <li>Lung Transplant</li> <li>Extracorporeal Membrane Oxygenation</li> </ul>	<ul style="list-style-type: none"> <li>Device: MRP and NMES(neuromuscular electric stimulation)</li> <li>Other: Standard of Care</li> </ul>	<ul style="list-style-type: none"> <li>University of Maryland, Baltimore, Maryland, United States</li> </ul>

U.S. National Library of Medicine | U.S. National Institutes of Health | U.S. Department of Health & Human Services

## APPENDIX 3: SECONDARY OUTCOME MEASURES

Below are screenshots of secondary outcome measurements from the reported protocols of Dedeyne, et al. <sup>1</sup> and Almazán <sup>2</sup>.

### Dedeyne et al. (2020)

**Table 4** Secondary outcomes

Secondary outcomes	Baseline versus W12 change	W12 versus W24 change	Other time points
Muscle mass	X	X	
Muscle strength: knee and handgrip	X	X	
Body composition	X	X	
Balance	X	X	W1, W2, W4, W6, W8 and W10 in participants with exercise intervention to follow progression
Frailty	X	X	
Sarcopenia	X	X	
Activities of daily living	X	X	
Physical behaviour	X	X	
Quality of life	X	X	
Number of falls and fear of falling	X	X	
Malnutrition	X	X	W6
Cognitive functioning	X	X	
Dietary intake	X	X	W1, W3, W11
Use of health care	X	X	W1, W4, W8, W16, W20, W22,
Benefits and adverse events			W1, W4, W8, W16, W20, W22, W24
Blood measures	X	X	Vit D: screening
Subjective compliance with the interventions and vitamin D intake	X		W1, W2, W4, W6, W8 and W10
Objective compliance with the interventions	X		
Muscle parameters	X		

## Almazán et al. (2022)

### Secondary Outcome Measures

1. BMI (Body Mass Index) [ Time Frame: Up to twelve weeks ]  
Is calculated from the formula,  $\text{Weight (kg)} / \text{Height}^2 \text{ (m}^2\text{)}$ , whose unit is  $\text{kg/m}^2$ . It is a rough indicator of total body fat.
2. TUG (Timed Up and Go test) [ Time Frame: Up to twelve weeks ]  
Is a simple test used to assess a person's mobility and physical function.
3. Short Physical Performance Battery (SPPB) [ Time Frame: Up to twelve weeks ]  
It is an instrument that evaluates three aspects of mobility: balance, gait speed and strength of the lower limbs or limbs to get up from a chair.
4. Stabilometric Platform [ Time Frame: Up to twelve weeks ]  
instrument composed of resistive pressure sensors, used to measure the static or postural balance. The test was performed under both eyes-open and eyes-closed conditions.
5. FSS (Fatigue Severity Scale) [ Time Frame: Up to twelve weeks ]  
A self-report scale describing the severity of fatigue and the impact of fatigue on activities of daily living. The test is made up of 9 items with 7 response possibilities, so that 1 and 7 correspond to the minimum and maximum severity respectively. The total score corresponds to the sum of all the items with a total score range that goes from 9 to 63.
6. SF-36 (The Short Form-36 Health Survey) [ Time Frame: Up to twelve weeks ]  
Used extensively for assessing health-related quality of life. The test consists of 36 items that detect both positive and negative health states. The total score ranges from 0 to 100, where 0 represents the worst quality of life and 100 the best.
7. Percent of Body Fat (%) [ Time Frame: Up to twelve weeks ]  
Indicates the percentage of body fat to body weight.

## REFERENCES

1. Dedeyne L, Dupont J, Koppo K, et al. Exercise and Nutrition for Healthy AgeiNg (ENHANce) project - effects and mechanisms of action of combined anabolic interventions to improve physical functioning in sarcopenic older adults: study protocol of a triple blinded, randomized controlled trial. *BMC geriatrics* 2020;20(1):532.
2. Almazán AA. Sarcopenia, Active Aging and Oral Microbiota. Effects of HIIT in Older Adults. U.S National Library of Medicine: University of Jaén, 2022.

## **Appendix 4:** BMJ Open Sport & Exercise medicine authors guidelines

The guidelines for authors were retrieved from:

<https://bmjopensem.bmj.com/pages/authors/#review>

The guidelines are written for systematic reviews, but as there are no other published guidelines for scoping reviews these guidelines are used and adapted to a scoping review by using scoping review in title of assignment instead of systematic review.

### **Review**

Review articles should not exceed 4500 words, excluding references and tables.

Reviews provide in-depth discussions in established and new areas in sports and exercise medicine. If you feel your review warrants additional length, consult the editorial office and/or mention the reason in your Cover letter.

For all reviews we ask you to provide in 3-4 bullet points subheadings “What is already known”, and “What are the new findings”, highlighting the clinical relevance of your work.

### **Systematic review**

Systematic reviews provide Level One evidence; they form a critical part of the literature.

- We are looking for experts to synthesise the literature and to comment on the outcomes of the review in a meaningful and clinically relevant way
- The topic must be of relevance to clinicians with the key question ‘will the findings change what practitioners do?’
- Succinct and focussed reviews, with questions that are topical, novel or controversial that will attract readers and researchers to the journal are more likely to be accepted
- The literature search should have been completed within 12 months of manuscript submission.
- All titles should include ‘a Systematic Review’
- Systematic review registration: registry and number (if registered)

**Word count:** up to 4500 words

**Abstract:** up to 250 words and structured including the headings; Objectives, Design, Data sources, Eligibility criteria for selecting studies, Results and Summary/Conclusion

**Tables/illustrations:** up to 6 tables and/or figures

**References:** up to 100

**Reporting guidelines:** Prisma checklist/statement and flowchart

### **Formatting the paper**

Selected parts from: <https://authors.bmj.com/writing-and-formatting/formatting-your-paper/>

### **Title page**

The title page must contain the following information:

- Title of the article
- Full name, postal address and e-mail of the corresponding author
- Full name, department, institution, city and country of all co-authors
- Word count, excluding title page, abstract, references, figures and tables

### **Manuscript format**

The manuscript should be presented in the following order:

- Title page
- Abstract, or a summary for case reports (Note: references should not be included in abstracts or summaries)
- Main text separated under appropriate headings and subheadings using the following hierarchy: BOLD CAPS, bold lower case, Plain text, Italics
- Tables should be in Word format and placed in the main text where the table is first cited. Tables should also be cited in numerical order
- Acknowledgments, Competing Interests, Funding and all other required statements
- References. All references should be cited in the main text in numerical order
- Figures must be uploaded as separate files and must be cited within the main text in numerical order and legends should be provided at the end of the manuscript.
- Tables should be in Word format and placed in the main text where the table is first cited. Tables must be cited in the main text in numerical order.

### **References**

- Citing in the text: journals from BMJ use a slightly modified version of Vancouver referencing style. References must be numbered sequentially as they appear in the

text. References cited in figures or tables (or in their legends and footnotes) should appear at the end of the reference list to avoid re-numbering if tables and figures are moved around at peer review/proof stage. Reference numbers in the text should be inserted immediately after punctuation (with no word spacing)—for example,[6] not [6].

- Where more than one reference is cited, these should be separated by a comma, for example,[1, 4, 39]. For sequences of consecutive numbers, give the first and last number of the sequence separated by a hyphen, for example,[22-25].
- **Preparing the reference list:** References must be numbered consecutively in the order in which they are mentioned in the text.