

# Systematic search for literature on Exercise training in Duchenne Muscular disorder

Literature searches performed September 2019 and updated 26.02.2021 by

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## About the literature search

The following databases were selected: EMBASE, Medline, Cochrane CENTRAL, CINAHL, Scopus, PEDro and OT-Seeker.

The search was developed for searching EMBASE with an Ovid interface (figure 1). The subject headings/thesaurus terms were adapted to each of the other databases that has a thesaurus. The same textwords were searched in all databases. There is an exception for the databases PEDro and OT-Seeker. A detailed search history for each database follows.

The original search was performed 19<sup>th</sup> and 20<sup>th</sup> of September 2019. It was run again 26<sup>th</sup> of February 2021, to uncover more recent research.

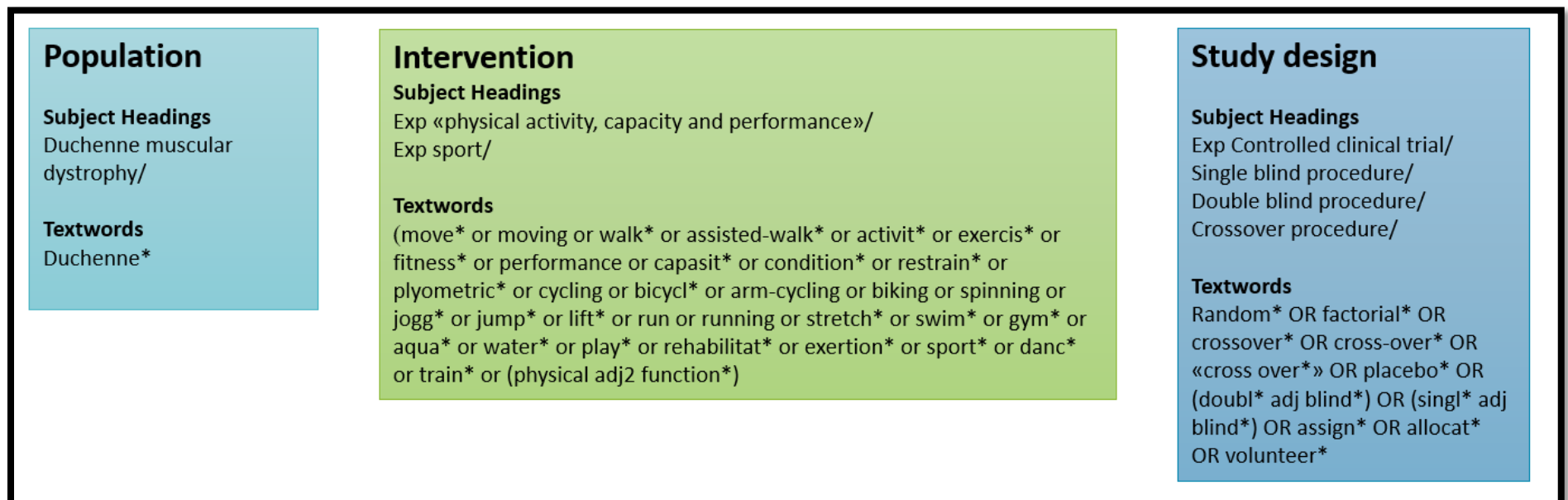


Figure 1

## EMBASE (Updated search performed 26.02.2021)

Database(s): Embase 1974 to 2021 Week 07

Search Strategy:

#	Searches	Results
1	duchenne muscular dystrophy/	16902
2	exp "physical activity, capacity and performance"/	966037
3	exp sport/	173545
4	"duchenne*".ab,kw,ti.	17402
5	(move* or moving or walk* or assisted-walk* or activit* or exercis* or fitness* or performance or capasi* or condition* or restrain* or plyometric* or cycling or bicycl* or arm-cycling or biking or spinning or jogg* or jump* or lift* or run or running or stretch* or swim* or gym* or aqua* or water* or play* or rehabilitat* or exertion* or sport* or danc* or train* or (physical adj2 function*)).ab,kw,ti.	10486420
6	"random*".ab,kw,ti.	1648247
7	"factorial*".ab,kw,ti.	41142
8	(crossover* or cross-over* or cross over*).ab,kw,ti.	112289
9	"placebo*".ab,kw,ti.	324507
10	(doubl* adj blind*).ab,kw,ti.	219699
11	(singl* adj blind*).ab,kw,ti.	26661
12	"assign*".ab,kw,ti.	419268
13	"allocat*".ab,kw,ti.	167430
14	"volunteer*".ab,kw,ti.	267727
15	crossover procedure/	66468
16	double blind procedure/	182926
17	exp controlled clinical trial/	840199
18	single blind procedure/	42114
19	6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18	2622792

20 1 or 4  
 21 2 or 3 or 5  
 22 19 and 20 and 21

20854  
 10738106  
 583

## EMBASE (Original search performed 19.09.2020)

Database(s): Embase 1974 to 2019 September 18

Search Strategy:

#	Searches	Results
1	Duchenne muscular dystrophy/	15490
2	exp "physical activity, capacity and performance"/	869882
3	exp sport/	154628
4	"duchenne*".ab,kw,ti.	16044
5	(move* or moving or walk* or assisted-walk* or activit* or exercis* or fitness* or performance or capait* or condition* or restrain* or plyometric* or cycling or bicycl* or arm-cycling or biking or spinning or jogg* or jump* or lift* or run or running or stretch* or swim* or gym* or aqua* or water* or play* or rehabilitat* or exertion* or sport* or danc* or train* or (physical adj2 function*)).ab,kw,ti.	9493817
6	"random*".ab,kw,ti.	1465491
7	"factorial*".ab,kw,ti.	36725
8	(crossover* or cross-over* or cross over*).ab,kw,ti.	102646
9	"placebo*".ab,kw,ti.	298263
10	(doubl* adj blind*).ab,kw,ti.	203527
11	(singl* adj blind*).ab,kw,ti.	23754
12	"assign*".ab,kw,ti.	376102

13	"allocat*".ab,kw,ti.	146237
14	"volunteer*".ab,kw,ti.	250143
15	crossover procedure/	60929
16	double blind procedure/	166252
17	exp controlled clinical trial/	758423
18	single blind procedure/	36711
19	6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18	2370366
20	1 or 4	19269
21	2 or 3 or 5	9725179
22	19 and 20 and 21	520

## Medline (Updated search performed 26.02.2021)

Database(s): Ovid MEDLINE(R) and Epub Ahead of Print, In-Process, In-Data-Review & Other Non-Indexed Citations and Daily 1946 to February 25, 2021

Search Strategy:

#	Searches	Results
1	Muscular Dystrophy, Duchenne/	5703
2	exp "musculoskeletal and neural physiological phenomena"/	1934361
3	exp Recreation/	215073
4	Breathing Exercises/	3527
5	"duchenne*".ab,kw,ti.	12337
6	(move* or moving or walk* or assisted-walk* or activit* or exercis* or fitness* or performance or capisit* or condition* or restrain* or plyometric* or cycling or bicycl* or arm-cycling or biking or spinning or jogg* or jump* or lift* or run or running or stretch* or swim* or gym* or aqua* or water* or play* or rehabilitat* or exertion* or sport* or danc* or train* or (physical adj2 function*)).ab,kw,ti.	8457487

7	1 or 5	13205
8	2 or 3 or 4 or 6	9469296
9	7 and 8	4794
10	"random*".ab,kw,ti.	1201580
11	"factorial*".ab,kw,ti.	31984
12	(crossover* or cross-over* or cross over*).ab,kw,ti.	89777
13	"placebo*".ab,kw,ti.	223308
14	(doubl* adj blind*).ab,kw,ti.	155299
15	(singl* adj blind*).ab,kw,ti.	19410
16	"assign*".ab,kw,ti.	330718
17	"allocat*".ab,kw,ti.	127731
18	"volunteer*".ab,kw,ti.	197604
19	exp Epidemiologic Research Design/	1216859
20	exp clinical trial/	884199
21	10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20	2999549
22	9 and 21	497

## Medline (Original search performed 19.09.2020)

Database(s): Ovid MEDLINE(R) and Epub Ahead of Print, In-Process & Other Non-Indexed Citations and Daily 1946 to September 17, 2019  
Search Strategy:

#	Searches	Results
1	Muscular Dystrophy, Duchenne/	5070
2	exp "musculoskeletal and neural physiological phenomena"/	1834319
3	exp Recreation/	198650

4	Breathing Exercises/	3266
5	"duchenne*".ab,kw,ti.	11443
6	(move* or moving or walk* or assisted-walk* or activit* or exercis* or fitness* or performance or capait* or condition* or restrain* or plyometric* or cycling or bicycl* or arm-cycling or biking or spinning or jogg* or jump* or lift* or run or running or stretch* or swim* or gym* or aqua* or water* or play* or rehabilitat* or exertion* or sport* or danc* or train* or (physical adj2 function*)).ab,kw,ti.	7700296
7	1 or 5	12257
8	2 or 3 or 4 or 6	8673755
9	7 and 8	4375
10	"random*".ab,kw,ti.	1075117
11	"factorial*".ab,kw,ti.	28441
12	(crossover* or cross-over* or cross over*).ab,kw,ti.	83166
13	"placebo*".ab,kw,ti.	208076
14	(doubl* adj blind*).ab,kw,ti.	145909
15	(singl* adj blind*).ab,kw,ti.	17293
16	"assign*".ab,kw,ti.	300610
17	"allocat*".ab,kw,ti.	111971
18	"volunteer*".ab,kw,ti.	186133
19	exp Epidemiologic Research Design/	1133530
20	exp clinical trial/	836250
21	10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20	2757153
22	9 and 21	450

## Cochrane CENTRAL (Updated search performed 26.02.2021)

Date Run: 26/02/2021 11:04:58

Comment:

ID	Search Hits
#1	MeSH descriptor: [Muscular Dystrophy, Duchenne] this term only 227
#2	MeSH descriptor: [Musculoskeletal and Neural Physiological Phenomena] explode all trees 94153
#3	MeSH descriptor: [Recreation] explode all trees 17155
#4	MeSH descriptor: [Breathing Exercises] this term only 810
#5	(duchenne*):ti,ab,kw 761
#6	((((move* or moving or walk* or assisted-walk* or activit* or exercis* or fitness* or performance or capait* or condition* or restrain* or plyometric* or cycling or bicycl* or arm-cycling or biking or spinning or jogg* or jump* or lift* or run or running or stretch* or swim* or gym* or aqua* or water* or play* or rehabilitat* or exertion* or sport* or danc* or train* or (physical NEAR/2 function*))))):ti,ab,kw 639487
#7	#1 OR #5 761
#8	#2 OR #3 OR #4 OR #6 668340
#9	#7 AND #8 440

## Cochrane CENTRAL (Original search performed 19.09.2019)

Date Run: 19/09/2019 11:42:00

ID	Search Hits
#1	MeSH descriptor: [Muscular Dystrophy, Duchenne] this term only 184



- #2 MeSH descriptor: [Musculoskeletal and Neural Physiological Phenomena] explode all trees 89332
- #3 MeSH descriptor: [Recreation] explode all trees 15856
- #4 MeSH descriptor: [Breathing Exercises] this term only 720
- #5 (duchenne\*):ti,ab,kw 693
- #6 ((move\* or moving or walk\* or assisted-walk\* or activit\* or exercis\* or fitness\* or performance or capacit\* or condition\* or restrain\* or plyometric\* or cycling or bicycl\* or arm-cycling or biking or spinning or jogg\* or jump\* or lift\* or run or running or stretch\* or swim\* or gym\* or aqua\* or water\* or play\* or rehabilitat\* or exertion\* or sport\* or danc\* or train\* or (physical NEAR/2 function\*)):ti,ab,kw 556596
- #7 #1 OR #5 693
- #8 #2 OR #3 OR #4 OR #6 584427
- #9 #7 AND #8 398

## CINAHL (Updated search performed 26.02.2021)

Friday, February 26, 2021 6:16:23 AM

#	Query	Results
S19	(S8 OR S9 OR S10 OR S11 OR S12 OR S13 OR S14 OR S15 OR S16 OR S17) AND (S7 AND S18)	190
S18	S8 OR S9 OR S10 OR S11 OR S12 OR S13 OR S14 OR S15 OR S16 OR S17	1,283,283
S17	(MH "Crossover Design") OR (MH "Experimental Studies+") OR (MH "Nonexperimental Studies+") OR (MH "Quasi-Experimental Studies+")	1,044,800
S16	TI volunteer* OR AB volunteer*	44,952
S15	TI allocat* OR AB allocat*	37,900
S14	TI assign* OR AB assign*	80,902
S13	TI singl* N1 blind* OR AB singl* N1 blind*	7,525

S12	TI doubl* N1 blind* OR AB doubl* N1 blind*	42,682
S11	TI placebo* OR AB placebo*	64,251
S10	TI ( crossover* OR cross-over* or cross over* ) OR AB ( crossover* OR cross-over* or cross over* )	22,904
S9	TI factorial* OR AB factorial*	6,630
S8	TI random* OR AB random*	367,945
S7	S5 AND S6	718
S6	S3 OR S4	1,475,614
S5	S1 OR S2	2,314
S4	TI ( (move* OR moving OR walk* or assisted-walk* or activit* or exercis* or fitness* or performance or capazit* or condition* or restrain* or plyometric* or cycling or bicycl* or arm-cycling or biking or spinning or jogg* or jump* or lift* or run or running or stretch* or swim* or gym* or aqua* or water* or play* or rehabilitat* or exertion* or sport* or danc* or train* or (physical N2 function*)) ) OR AB ( (move* OR moving or walk* or assisted-walk* or activit* or exercis* or fitness* or performance or capazit* or condition* or restrain* or plyometric* or cycling or bicycl* or arm-cycling or biking or spinning or jogg* or jump* or lift* or run or running or stretch* or swim* or gym* or aqua* or water* or play* or rehabilitat* or exertion* or sport* or danc* or train* or (physical N2 function*)) )	1,399,550
S3	(MH "Exertion+") OR (MH "Exercise+") OR (MH "Recreation+") OR (MH "Physical Fitness+") OR (MH "Sports+") OR (MH "Physical Performance") OR (MH "Walking+") OR (MH "Physical Activity")	270,078
S2	duchenne*	2,314
S1	(MH "Muscular Dystrophy, Duchenne")	1,674

CINAHL (Original search performed 19.09.2019)

Search ID#	Search Terms	Results
S19	(S8 OR S9 OR S10 OR S11 OR S12 OR S13 OR S14 OR S15 OR S16 OR S17) AND (S7 AND S18)	152
S18	S8 OR S9 OR S10 OR S11 OR S12 OR S13 OR S14 OR S15 OR S16 OR S17	1,081,551
S17	(MH "Crossover Design") OR (MH "Experimental Studies+") OR (MH "Nonexperimental Studies+") OR (MH "Quasi-Experimental Studies+")	887,528
S16	TI volunteer* OR AB volunteer*	37,656
S15	TI allocat* OR AB allocat*	30,610
S14	TI assign* OR AB assign*	66,960
S13	TI singl* N1 blind* OR AB singl* N1 blind*	6,044
S12	TI doubl* N1 blind* OR AB doubl* N1 blind*	35,340
S11	TI placebo* OR AB placebo*	53,244
S10	TI ( crossover* OR cross-over* or cross over* ) OR AB ( crossover* OR cross-over* or cross over* )	18,819
S9	TI factorial* OR AB factorial*	5,413
S8	TI random* OR AB random*	301,032
S7	S5 AND S6	596
S6	S3 OR S4	1,213,257
S5	S1 OR S2	1,938
S4	TI ( (move* OR moving OR walk* or assisted-walk* or activit* or exercis* or fitness* or performance or capasit* or condition* or restrain* or plyometric* or cycling or bicycl* or arm-cycling or biking or spinning or jogg* or jump* or lift* or run or running or stretch* or swim* or gym* or aqua* or water* or play* or rehabilitat* or exertion* or sport* or danc* or train* or (physical N2 function*)) ) OR AB ( (move* OR moving or walk* or assisted-walk* or activit* or exercis* or fitness* or performance or capasit* or condition* or restrain* or plyometric* or	1,145,301

	cycling or bicycl* or arm-cycling or biking or spinning or jogg* or jump* or lift* or run or running or stretch* or swim* or gym* or aqua* or water* or play* or rehabilitat* or exertion* or sport* or danc* or train* or (physical N2 function*)) )	
S3	(MH "Exertion+") OR (MH "Exercise+") OR (MH "Recreation+") OR (MH "Physical Fitness+") OR (MH "Sports+") OR (MH "Physical Performance") OR (MH "Walking+") OR (MH "Physical Activity")	231,200
S2	duchenne*	1,938
S1	(MH "Muscular Dystrophy, Duchenne")	1,436

## Scopus (Updated search performed 26.02.2021)

(( (TITLE-ABS-KEY (duchenne\*)) AND ((TITLE-ABS-KEY (move\* OR moving OR walk\* OR assisted-walk\* OR activit\* OR exercis\* OR fitness\* OR performance\*)) OR (TITLE-ABS-KEY (capasit\* OR condition\* OR restrain\* OR plyometric\* OR cycling OR bicycl\* OR arm-cycling OR biking)) OR (TITLE-ABS-KEY (spinning OR jogg\* OR jump\* OR lift\* OR run OR running OR stretch\* OR swim\*)) OR (TITLE-ABS-KEY (gym\* OR aqua\* OR water\* OR play\* OR rehabilitat\* OR exertion\* OR sport\* OR danc\* OR train\*)) OR (TITLE-ABS-KEY (physical W/2 function\*)) OR (TITLE-ABS-KEY (endur\* OR effort\* OR exertion OR recover\* OR restitut\* OR rest)) OR (TITLE-ABS-KEY (physical W/1 condition\*)) OR (TITLE-ABS-KEY (physical W/1 restrain\*)) OR (TITLE-ABS-KEY (physical W/1 abilit\*)) OR (TITLE-ABS-KEY (climb\* OR lift\* OR breath\* OR weight\* OR toleran\* OR gam\*)) OR (TITLE-ABS-KEY (physical\* W/2 stress)))) AND ((TITLE-ABS-KEY (random\* OR factorial\* OR placebo\* OR assign\* OR allocat\* OR volunteer\*)) OR (TITLE-ABS-KEY ("cross over" OR "crossover")) OR (TITLE-ABS-KEY (clinical W/2 test\*)) OR (TITLE-ABS-KEY (clinical W/2 trial\*)) OR (TITLE-ABS-KEY (clinical W/2 stud\*)) OR (TITLE-ABS-KEY ("control group\*")) OR (TITLE-ABS-KEY (quasi PRE/2 random\*)) OR (TITLE-

ABS-KEY ( quasi PRE/2 experiment\* ) ) OR ( TITLE-ABS-KEY ( "doubl\* blind\*" ) ) OR ( TITLE-ABS-KEY ( "singl\* blind\*" ) ) ) View less

We got 2119 hits – Because of the limitations in numbers of references that can be exported at the same time, and as this was only an update - we chose to export references from 2017 – 2021 only (486 references)

## Scopus (Original search performed 20.09.2019)

(( TITLE-ABS-KEY ( duchenne\* ) ) AND (( TITLE-ABS-KEY ( move\* OR moving OR walk\* OR assisted-walk\* OR activit\* OR exercis\* OR fitness\* OR performance\* ) ) OR ( TITLE-ABS-KEY ( capacit\* OR condition\* OR restrain\* OR plyometric\* OR cycling OR bicycl\* OR arm-cycling OR biking ) ) OR ( TITLE-ABS-KEY ( spinning OR jogg\* OR jump\* OR lift\* OR run OR running OR stretch\* OR swim\* ) ) OR ( TITLE-ABS-KEY ( gym\* OR aqua\* OR water\* OR play\* OR rehabilitat\* OR exertion\* OR sport\* OR danc\* OR train\* ) ) OR ( TITLE-ABS-KEY ( physical W/2 function\* ) ) OR ( TITLE-ABS-KEY ( endur\* OR effort\* OR exertion OR recover\* OR restitut\* OR rest ) ) OR ( TITLE-ABS-KEY ( physical W/1 condition\* ) ) OR ( TITLE-ABS-KEY ( physical W/1 restrain\* ) ) OR ( TITLE-ABS-KEY ( physical W/1 abilit\* ) ) OR ( TITLE-ABS-KEY ( climb\* OR lift\* OR breath\* OR weight\* OR toleran\* OR gam\* ) ) OR ( TITLE-ABS-KEY ( physical\* W/2 stress ) ) ) ) AND (( TITLE-ABS-KEY ( random\* OR factorial\* OR placebo\* OR assign\* OR allocat\* OR volunteer\* ) ) OR ( TITLE-ABS-KEY ( "cross over" OR "crossover" ) ) OR ( TITLE-ABS-KEY ( clinical W/2 test\* ) ) OR ( TITLE-ABS-KEY ( clinical W/2 trial\* ) ) OR ( TITLE-ABS-KEY ( clinical W/2 stud\* ) ) OR ( TITLE-ABS-KEY ( "control group\*" ) ) OR ( TITLE-ABS-KEY ( quasi PRE/2 random\* ) ) OR ( TITLE-ABS-KEY ( quasi PRE/2 experiment\* ) ) OR ( TITLE-ABS-KEY ( "doubl\* blind\*" ) ) OR ( TITLE-ABS-KEY ( "singl\* blind\*" ) ) ) )

1932 hits

## PEDro (Original search performed 20.09.2019, updated 26.02.2021)

PEDro is a relatively small and specialized database. It is neither possible or necessary to do a search as comprehensive and thorough as for the databases mentioned above. We search only for «Duchenne\*» in the «Abstract & title»-field. This gave us 30 hits in the first search (20.09.2019) and 34 when updated in 2021.

## OT Seeker (Original search performed 20.09.2019, updated 26.02.2021)

OT Seeker is a small and specialized database. It is neither possible or necessary to do a search as comprehensive and thorough as for the databases mentioned above. We search only for «Duchenne\*» in the «Abstract & title»-field. This gave us 4 hits in the first search (20.09.2019) and the same number of hits when updated in 2021.

## Other sources

We have also searched other sources where systematic searches of the same level is not possible. This includes:

- ClicalTrials.gov - [Home - ClinicalTrials.gov](https://www.clinicaltrials.gov/)
- Cristin - <https://www.cristin.no/>
- Grey Literature Report - <https://www.greylit.org/>
- NORA - <https://nora.openaccess.no/>
- Open Access Theses and Dissertations - <https://oatd.org/>
- Open Grey - <http://www.opengrey.eu/>
- Proquest database of thesis and dissertations -
- [Science.gov](https://www.science.gov/)
- SwePub - <http://swepub.kb.se/>
- WHOLIS - <http://www.who.int/library/databases/en/index.html>
- [WorldWideScience.org](https://www.worldwide-science.org/)

## References and Citations

Reference lists of included articles were manually screened to identify additional studies.

Google Scholar was used for finding citations to the included articles. An update was done on 26<sup>th</sup> of February 2021 – with no new hits.