**Additional file 2: Search strategies in the different databases**

**1. Medline**

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| Interface: Ovid MEDLINE(R) and Epub Ahead of Print, In-Process & Other Non-Indexed Citations and DailyComment: In Ovid, two or more words are automatically searched as phrases; i.e. no quotation marks are needed | Field labels* exp/ = exploded MeSH term
* / = non exploded MeSH term
* .ti,ab,kf. = title, abstract and author keywords
* adjx = within x words, regardless of order
* \* = truncation of word for alternate endings
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| **#** | **Searches** |
| 1 | exp Back pain/ |
| 2 | backache\*.ti,ab,kf. |
| 3 | (back\* or lumbar or lumbosacral or sacral or spinal) adj3 (ache\* or pain\*).ti,ab,kf. |
| 4 | or/1-3 |
| 5 | Chronic pain/ |
| 6 | (chronic or long lasting or long standing or long-term or longlasting or longstanding or persistent) adj3 (ache\* or pain).ti,ab,kf. |
| 7 | or/5-6 |
| 8 | back.ti,ab,kf. |
| 9 | 7 and 8 |
| 10 | 4 or 9 |
| 11 | exp Exercise/ |
| 12 | exp Exercise Therapy/ |
| 13 | exp Exercise Movement Techniques/ |
| 14 | exp Sports/ |
| 15 | (aerobic\* or aquatherap\* or aqua therap\* or bicycle\* or bicycling or cycling or calisthenic\* or callisthenic\* or cardiopulmonary conditioning or climbing or danc\* or exercise\* or gi gong or gigong or gymnastic or hiit or hopping or hydrotherap\* or isometric training or jogging or jumping or kinesiolog\* or motion therap\* or movement therap\* or pilates or physical condition\* or plyometric\* or relaxation\* or running or sport\* or stretching or swim\* or t'ai chi or tai or thai or taiji or taijiquan or taichi or treadmill or walk\* or warm-up or water therap\* or weight\* lifting or lifting weight\* or weightlifting or power lifting or water therap\* or weight training or yoga).ti,ab,kf. |
| 16 | (physical\* adj2 (activ\* or training).ti,ab,kf. |
| 17 | (anaerobic or cardio\* or circuit or interval\* or motor control or muscle\* or resistance\* or strength\*) adj2 (program\* or training).ti,ab,kf. |
| 18 | or/11-17 |
| 19 | 10 and 18 |
| 20 | (systematic or umbrella or scoping) adj3 review).ti. |
| 21 | (meta analys\* or metaanalys\* or meta synthes\* or metasynthes\*).ti. |
| 22 | "review of reviews".ti. |
| 23 | Systematic Review.pt. |
| 24 | Meta-analysis.pt. |
| 25 | Meta-analysis as topic/ |
| 26 | Systematic Reviews as Topic/ |
| 27 | or/20-24 |
| 28 | 19 and 27 |

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**2. Embase**

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| Interface: embase.comNumber of hits: 794Comment: Emtree is the controlled vocabulary in Embase | Field labels* /exp = exploded Emtree term
* /de = non exploded Emtree term
* ti,ab = title and abstract
* NEAR/x = within x words, regardless of order
* \* = truncation of word for alternate endings
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| **#27 #18** AND **#26****#26 #19** OR **#20** OR **#21** OR **#22** OR **#23** OR **#24** OR **#25****#25 'systematic review (topic)'**/de**#24 'meta analysis (topic)'**/de**#23 'systematic review'**/de**#22 'meta analysis'**/exp**#21 'review of reviews'**:ti**#20 'meta analys\*'**:ti OR **metaanalys\***:ti OR **'meta synthes\*'**:ti OR **metasynthes\***:ti**#19** (**systematic** OR **umbrella** OR **scoping**) NEAR/3 **review**):ti**#18 #10** AND **#17****#17 #11** OR **#12** OR **#13** OR **#14** OR **#15** OR **#16****#16** (**anaerobic** OR **cardio\*** OR **circuit** OR **interval\*** OR **'motor control'** OR **muscle\*** OR **resistance\*** OR **strength\***) NEAR/2 (**program\*** OR **training**):ti,ab,kw**#15** (**physical\*** NEAR/2 (**activ\*** OR **training**):ti,ab,kw**#14 aerobic\***:ti,ab,kw OR **aquatherap\***:ti,ab,kw OR **'aqua therap\*'**:ti,ab,kw OR **bicycle\***:ti,ab,kw OR **bicycling**:ti,ab,kw OR **cycling**:ti,ab,kw OR **calisthenic\***:ti,ab,kw OR **callisthenic\***:ti,ab,kw OR **'cardiopulmonary conditioning'**:ti,ab,kw OR **climbing**:ti,ab,kw OR **danc\***:ti,ab,kw OR **exercise\***:ti,ab,kw OR **'gi gong'**:ti,ab,kw OR **gigong**:ti,ab,kw OR **gymnastic**:ti,ab,kw OR **hiit**:ti,ab,kw OR **hopping**:ti,ab,kw OR **hydrotherap\***:ti,ab,kw OR **'isometric training'**:ti,ab,kw OR **jogging**:ti,ab,kw OR **jumping**:ti,ab,kw OR **kinesiolog\***:ti,ab,kw OR **'motion therap\*'**:ti,ab,kw OR **'movement therap\*'**:ti,ab,kw OR **pilates**:ti,ab,kw OR **'physical condition\*'**:ti,ab,kw OR **plyometric\***:ti,ab,kw OR **relaxation\***:ti,ab,kw OR **running**:ti,ab,kw OR **sport\***:ti,ab,kw OR **stretching**:ti,ab,kw OR **swim\***:ti,ab,kw OR **'t ai chi'**:ti,ab,kw OR **tai**:ti,ab,kw OR **thai**:ti,ab,kw OR **taiji**:ti,ab,kw OR **taijiquan**:ti,ab,kw OR **taichi**:ti,ab,kw OR **treadmill**:ti,ab,kw OR **walk\***:ti,ab,kw OR **'warm up'**:ti,ab,kw OR **'weight\* lifting'**:ti,ab,kw OR **'lifting weight\*'**:ti,ab,kw OR **weightlifting**:ti,ab,kw OR **'power lifting'**:ti,ab,kw OR **'water therap\*'**:ti,ab,kw OR **'weight training'**:ti,ab,kw OR **yoga**:ti,ab,kw**#13 'sport'**/exp**#12 'kinesiotherapy'**/exp**#11 'exercise'**/exp**#10 #7** OR **#9****#9 #7** AND **#8****#8 back**:ti,ab,kw**#7 #5** OR **#6****#6** (**chronic** OR **'long lasting'** OR **'long standing'** OR **'long-term'** OR **longlasting** OR **'longstanding'** OR **persistent**) NEAR/3 (**ache\*** OR **pain**):ti,ab,kw**#5 'chronic pain'**/exp**#4 #1** OR **#2** OR **#3****#3** (**back\*** OR **lumbar** OR **lumbosacral** OR **sacral** OR **spinal**) NEAR/3 (**ache\*** OR **pain\***):ti,ab,kw**#2 backache\***:ti,ab,kw**#1 'backache'**/exp |

**3. Cochrane Library**

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| Interface: Wiley | Field labels* ti,ab,kw = title, abstract and author keywords
* NEAR/x = within x words, regardless of order
* \* = truncation of word for alternate endings
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| ID Search #1 (back\* or lumbar or lumbosacral or sacral or spinal) NEAR/3 (ache\* or pain\*):ti,ab,kw #2 backache\*:ti,ab,kw #3 #1 OR #2 #4 (chronic OR 'long lasting' OR 'long standing' OR 'long-term' OR longlasting OR 'longstanding' OR persistent) NEAR/3 (ache\* OR pain):ti,ab,kw #5 back:ti,ab,kw #6 #4 AND #5 #7 #3 OR #6 #8 aerobic\*:ti,ab,kw OR aquatherap\*:ti,ab,kw OR 'aqua therap\*':ti,ab,kw OR bicycle\*:ti,ab,kw OR bicycling:ti,ab,kw OR cycling:ti,ab,kw OR calisthenic\*:ti,ab,kw OR callisthenic\*:ti,ab,kw OR 'cardiopulmonary conditioning':ti,ab,kw OR climbing:ti,ab,kw OR danc\*:ti,ab,kw OR exercise\*:ti,ab,kw OR 'gi gong':ti,ab,kw OR gigong:ti,ab,kw OR gymnastic:ti,ab,kw OR hiit:ti,ab,kw OR hopping:ti,ab,kw OR hydrotherap\*:ti,ab,kw OR 'isometric training':ti,ab,kw OR jogging:ti,ab,kw OR jumping:ti,ab,kw OR kinesiolog\*:ti,ab,kw OR 'motion therap\*':ti,ab,kw OR 'movement therap\*':ti,ab,kw OR pilates:ti,ab,kw OR 'physical condition\*':ti,ab,kw OR plyometric\*:ti,ab,kw OR relaxation\*:ti,ab,kw OR running:ti,ab,kw OR sport\*:ti,ab,kw OR stretching:ti,ab,kw OR swim\*:ti,ab,kw OR 't ai chi':ti,ab,kw OR tai:ti,ab,kw OR thai:ti,ab,kw OR taiji:ti,ab,kw OR taijiquan:ti,ab,kw OR taichi:ti,ab,kw OR treadmill:ti,ab,kw OR walk\*:ti,ab,kw OR 'warm up':ti,ab,kw OR 'weight\* lifting':ti,ab,kw OR 'lifting weight\*':ti,ab,kw OR weightlifting:ti,ab,kw OR 'power lifting':ti,ab,kw OR 'water therap\*':ti,ab,kw OR 'weight training':ti,ab,kw OR yoga:ti,ab,kw #9 (physical\* NEAR/2 (activ\* OR training):ti,ab,kw #10 (anaerobic OR cardio\* OR circuit OR interval\* OR 'motor control' OR muscle\* OR resistance\* OR strength\*) NEAR/2 (program\* OR training):ti,ab,kw#11 #8 OR #9 OR #10 #12 #7 AND #11  |

**4. Web of Science Core Collection**

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| Interface: Clarivate AnalyticsNote: sometimes “quotation marks” are needed for single search terms to avoid automatic term mapping (lemmatization). | Field labels* TS/Topic = title, abstract, author keywords and Keywords Plus
* NEAR/x = within x words, regardless of order
* \* = truncation of word for alternate endings
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| **Set** |  |
| # 7 | #6 AND #5 |
| # 6 | TITLE: (systematic OR umbrella OR scoping) NEAR/3 review) *OR* TITLE: ("meta analys\*" or metaanalys\* or "meta synthes\*" or metasynthes\*) *OR* TITLE: ("review of reviews") |
| # 5 | #4 AND #3 |
| # 4 | TOPIC: (aerobic\* OR aquatherap\* OR "aqua therap\*" OR bicycle\* OR bicycling OR cycling OR calisthenic\* OR callisthenic\* OR "cardiopulmonary conditioning" OR climbing OR danc\* OR exercise\* OR "gi gong" OR gigong OR gymnastic OR hiit OR hopping OR hydrotherap\* OR "isometric training" OR jogging OR jumping OR kinesiolog\* OR "motion therap\*" OR "movement therap\*" OR pilates OR "physical condition\*" OR plyometric\* OR relaxation\* OR running OR sport\* OR stretching OR swim\* OR "t ai chi" OR tai OR thai OR taiji OR taijiquan OR taichi OR treadmill OR walk\* OR "warm up" OR "weight\* lifting" OR "lifting weight\*" OR weightlifting OR "power lifting" OR "water therap\*" OR "weight training" OR yoga) *OR* TOPIC: (physical\* NEAR/2 (activ\* OR training) *OR* TOPIC: (anaerobic OR cardio\* OR circuit OR interval\* OR "motor control" OR muscle\* OR resistance\* OR strength\*) NEAR/2 (program\* OR training) |
| # 3 | #2 OR #1 |
| # 2 | TOPIC: (chronic OR "long lasting" OR "long standing" OR "long-term" OR longlasting OR longstanding OR persistent) NEAR/3 (ache\* OR pain) *AND* TOPIC: (back) |
| # 1 | TOPIC: (back\* or lumbar or lumbosacral or sacral or spinal) NEAR/3 (ache\* or pain\*) *OR* TOPIC: (backache\*) |

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