Descriptions of included studies

The trials were published between 1998 and 2021 and were all RCTs, except one semi randomised controlled trial (1).

Descriptions of exercise interventions

Exercise program duration ranged from 8-16 weeks; the most common length of the exercise periods was 12 weeks (39%) (1-7). The most common frequency of training was 3 times per week (56%) (1, 4, 6, 8-14). In seven trials (39%) exercise intervention was twice a week (2, 3, 7, 15-18) and one trial had four sessions a week (5). The most frequent duration of each session was 60 minutes (44%) (3, 5, 8-12, 14, 16), one of 70 minutes (50 + 20 min) (18), and one 45 minutes (7). Of those with a total exercise sessions of 60 minutes or longer, two trials had deep water running for 20 minutes (16, 18) and the other trial had sessions of 45 minutes (15), except for Mohr et al (13) who performed swim sessions of 25 minutes.
The individual supervised trials consisted of DWR (16, 18), carried out with a float vest, which keeps the participant in an upright position, without using the pool bottom as support for the feet. All DWR trials included participants with musculoskeletal conditions (7, 8, 16, 18), predominantly participants with CLBP (7, 16, 18), which compared AHIIT to AMICT.
The aquatic exercise sessions consisted of various aquatic exercises, running exercises, lower limb bicycling action, sidestepping, walking, front kicks, and cross-country skiing with or without equipment (e.g., gloves, pool noodles, aqua dumbbells, belts). Most of the trials used a combination of these exercises and majority of exercises were accompanied with upper limb movements. One trial including participants with musculoskeletal conditions, differed by using trampoline, lower limb exercises sitting on a float, and an aquatic cycle (15). Mohr et al (13) differed by using "all-out freestyle swimming". Trials including participants with neurological conditions (4, 9, 12) included water walking, side stepping, flexion and extension of lower limbs, adapted swim strokes, and joint mobility (4, 9, 12), except the trial by Chu et al (9) which included running. Only one of those trials did not describe use of upper limbs (12). Only two of all included trials did not explicitly describe upper limb involvement in the exercises, one of the trials had progressive resistance exercise of lower limbs as main activity (14) and one trial did only describe "quick movements of body"(6).
The intervals in the HIIT interventions were performed and described differently across trials. From several bouts of 30 seconds (13) to bouts of 4 x 4 minutes (6) (Table 2). Four trials had increasing target HR during exercise period (5, 9, 10), or described as the interval method was adopted throughout the training period at target intensities (2). The DWR sessions were in two

trials performed in 20 min as of additional DWR to other aquatic exercise (first 2 weeks at RPE 11, last 7 weeks at RPE 15) (16, 18), or 40 min at $HR_{AT,}$ readjusted after 8 weeks (8), or in bouts of 7 intervals at prescribed intensity (3 + 2 min or 4 + 1 min) of total 35 min (7) (Table 2).The majority of the studies monitored exercise intensity using Borg scale and heart rate (HR) monitors (eight studies, 44 %) (1, 4, 11, 12, 14, 15, 17, 18), six trials used HR monitors (6-10, 13) and four trials used the Borg scale (2, 3, 5, 16).

Comparison group

The DWR group in the study of Assis et al (8) trained at 9 beats per min lower than the LBHIIT group due to the variation in immersion influenced by water temperature and exercise intensity. In the study by Wadell et al (1), the patients that trained in water (AHIIT) attained lower HR compared to land group throughout the training period. Despite this, the rated dyspnoea and perceived exertion were as high as land group (4 and 14 on Borg) (1). The trials in this comparison groups included participants with respiratory conditions (1, 3), musculoskeletal conditions (8) and neurological conditions (4), and in all trials exercises included both lower and upper limbs, and repetitive large-muscle exercises. One trial in this comparison group differed by using DWR in water, and walking or running on land (8).
In the AHIIT vs AMICT comparison group, the participants included had predominantly musculoskeletal conditions (CLBP) and underwent DWR (16), except the study by Chu et al (9) including participants with neurological conditions which underwent water walking, running and side stepping.

Outcome

Seven studies (39%) had exercise capacity as primary outcome (4, 9, 10, 12, 15, 17, 18), 11 as a secondary outcome (61%). VO_{2peak} were reported in 12 trials (67%) (1-10, 14, 15), and seven of those trials used cardiopulmonary exercise testing (CPET) (58%) (1, 4, 7-10, 15) and five used indirect testing (42%) (2, 3, 5, 6, 14). In four trials 6- or 12-minute walk test (6MWT, 12MWT) was used (11, 12, 16, 17), shuttle run test (13), and a cycle ergometer (force produced) (18) to evaluate exercise capacity.

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