

Hydrotherapy

Evidence Update

August 2017

(Quarterly)



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Training Sessions 2017

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August (12.00-13.00)

15th (Tues) Interpreting Statistics

24th (Thurs) Critical Appraisal

September (13.00-14.00)

Fri 1st Literature Searching

Mon 4th Critical Appraisal

Tue 12th Interpreting Statistics

Wed 20th Literature Searching

Thu 28th Critical Appraisal

October (12.00-13.00)

Fri 6th Interpreting Statistics

Mon 9th Literature Searching

Tue 17th Critical Appraisal

Wed 25th Interpreting Statistics

Updates

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[Osteoporotic thoracolumbar vertebral compression fractures: Clinical manifestations and treatment](#)

Beta

... of life in some, but not all, studies . Aquatic therapy is an excellent means of pain management in our experience. Use of the Arthritis Foundation aquatic program hastens the relief of pain and can ...

[Exercise](#)

[Summary and recommendations](#)

[Overview of stress fractures](#) Beta

... pain-free. For instance, runners may walk briskly, use elliptical machines, perform shallow-end aquatic therapy or deep water running, or run on a reduced-weightbearing treadmill machine. Cycling and swimming ...

[Activity modification](#)

[Summary and recommendations Musculoskeletal injury in children and skeletally immature adolescents: Overview of treatment principles for nonoperative injuries](#) Beta

...therapy may be achieved through warm-up exercises or passive heating modalities (eg, hot packs, hydrotherapy, ultrasound) . Heat therapy may be used before exercise or in chronic conditions where recovery...

[Heat therapy](#)

[Summary](#)



[Aquatic exercise for the treatment of knee and hip osteoarthritis](#)

Else Marie Bartels , Carsten B Juhl , Robin Christensen , Kåre Birger Hagen , Bente Danneskiold-Samsøe , Hanne Dagfinrud and Hans Lund

Online Publication Date: March 2016

Journal Tables of Contents

Click on the journal title (+ Ctrl) for the most recent tables of contents. If you would like any of the papers in full text then please email the library:

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Musculoskeletal Science and Practice

October 2017, Volume 31, p1-76

Physiotherapy

September 2017, Volume 103, Issue 3

BMJ

Recent additions to the archive

Spine

August 15 2017, Volume 42, Issue 16

British Journal of Sports Medicine

August 2017, Volume 51, Issue 16



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Recent Database Articles related to Hydrotherapy

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1. Study Finds Positive Outcomes for Multidisciplinary Treatment of Chronic Pain.

Author(s):

Source: PT in Motion; Jul 2016; vol. 8 (no. 6); p. 44-44

Publication Date: Jul 2016

Publication Type(s): Periodical

Available in full text at [PT in Motion](#) - from ProQuest

Available in full text at [PT in Motion](#) - from EBSCOhost

Abstract:The article discusses research on the effectiveness of a multidisciplinary rehabilitation program in improving outcomes for chronic musculoskeletal pain (CMP) patients, published in an online issue of "Musculoskeletal Care" journal. Topics explored include the participation of CMP patients in a program which offers cognitive behavioral therapy (CBT) and hydrotherapy, among others, the assessment of pain and function of these patients, and the impact of treatment on pain medication usage.

Database: CINAHL

2. Rehabilitative Guidelines after Total Knee Arthroplasty: A Review.

Author(s): Mistry, Jaydev B; Elmallah, Randa D K; Bhave, Anil; Chughtai, Morad; Cherian, Jeffrey Jai; McGinn, Tanner; Harwin, Steven F; Mont, Michael A

Source: The journal of knee surgery; Apr 2016; vol. 29 (no. 3); p. 201-217

Publication Date: Apr 2016

Publication Type(s): Journal Article Review

PubMedID: 26963074

Abstract:Rehabilitation following total knee arthroplasty (TKA) continues to pose a challenge for both patients and providers. In addition, guidelines vary considerably between institutions, which often leave therapy regimens to the discretion of the provider. The lack of clear guidelines for rehabilitation may contribute to inadequate recovery of strength and range-of-motion, resulting in less optimal functional outcomes. Therefore, the aim of this review was to highlight and discuss a variety of post-TKA rehabilitative modalities currently available and to provide evidence regarding efficacy and practicality. Specifically, we assessed the role of and evidence for exercise therapy, aquatic therapy, balance training, continuous passive motion, cold therapy and compression, neuromuscular electrical stimulation, transcutaneous electrical nerve stimulation, and instrument-assisted soft-tissue therapy. Additionally, we proposed general recommendations for rehabilitation after TKA, and as we specifically described active and obese patients, we have included guidelines for these subsets as well. Our review examines the various rehabilitative modalities to offer

suggestions for recovery of strength and range-of-motion after TKA, with a focus on the early incorporation of exercise therapy, balance training, aquatic therapy, cryopneumatic therapy, neuromuscular electrical stimulation, and transcutaneous electrical nerve stimulation. Dedication and commitment to rehabilitation may help patients attain and exceed their preoperative activity levels.

Database: Medline

3. Developing Deep Water Exercise Equipment for Low Back Pain (LBP) Patients: medical validation experiences

Author(s): Jokai E.; Harsagyi A.

Source: Studies in health technology and informatics; 2015; vol. 217 ; p. 498-505

Publication Date: 2015

Publication Type(s): Article

PubMedID: 26294519

Available in full text at [Studies in health technology and informatics \[Stud Health Technol Inform\]](#) NLMUID: 9214582 - from EBSCOhost

Abstract:Authors describe a joint work of practicing physicians and rehabilitation specialist engineers. In our work we wanted to prove the efficacy of deep-water physiotherapy among the hydrotherapy treatments in patients with degenerative chronic low back pain, by monitoring both objective and subjective parameters. On the other hand, we are also seeking the possibilities of developing a water exercise tool which can spare the shoulders, can be used in deep water and is suitable for helping the three-dimensional movements of the spine without burdening the upper limbs and shoulders.

Database: EMBASE

4. Aquatic exercise and pain neurophysiology education versus aquatic exercise alone for patients with chronic low back pain: a randomized controlled trial.

Author(s): Pires, Diogo; Cruz, Eduardo Brazete; Caeiro, Carmen

Source: Clinical rehabilitation; Jun 2015; vol. 29 (no. 6); p. 538-547

Publication Date: Jun 2015

Publication Type(s): Comparative Study Randomized Controlled Trial Journal Article

PubMedID: 25200879

Available in full text at [Clinical Rehabilitation](#) - from ProQuest

Abstract:OBJECTIVEThe aim of this study was to compare the effectiveness of a combination of aquatic exercise and pain neurophysiology education with aquatic exercise alone in chronic low back pain patients.DESIGNSingle-blind randomized controlled trial.SETTINGOutpatient clinic.SUBJECTSSixty-two chronic low back pain patients were randomly allocated to receive aquatic exercise and pain neurophysiology education (n = 30) or aquatic exercise alone (n = 32).INTERVENTIONSTwelve sessions of a 6-week aquatic exercise programme preceded by 2 sessions of pain neurophysiology education. Controls received only 12 sessions of the 6-week aquatic exercise programme.MAIN MEASURESThe primary outcomes were pain intensity (Visual Analogue Scale) and functional disability (Quebec Back Pain Disability Scale) at the baseline, 6 weeks after the beginning of the aquatic exercise programme and at the 3 months follow-up. Secondary outcome was kinesiophobia (Tampa Scale of Kinesiophobia).RESULTSFifty-five participants completed the

study. Analysis using mixed-model ANOVA revealed a significant treatment condition interaction on pain intensity at the 3 months follow-up, favoring the education group (mean SD change: -25.4 ± 26.7 vs -6.6 ± 30.7 , $P < 0.005$). Although participants in the education group were more likely to report perceived functional benefits from treatment at 3 months follow-up (RR=1.63, 95%CI: 1.01-2.63), no significant differences were found in functional disability and kinesiophobia between groups at any time. **CONCLUSION** This study's findings support the provision of pain neurophysiology education as a clinically effective addition to aquatic exercise.

Database: Medline

5. Effectiveness of aquatic exercise for musculoskeletal conditions: A meta-analysis

Author(s): Barker A.; Talevski J.; Morello R.; Brand C.; Rahmann A.; Urquhart D.

Source: Physiotherapy (United Kingdom); May 2015; vol. 101

Publication Date: May 2015

Publication Type(s): Conference Abstract

Abstract: Background: Musculoskeletal conditions are widespread and are among the world's leading causes of chronic pain, disability and reduced health-related quality of life. Musculoskeletal conditions are also the most common causes for utilizing healthcare resources. This burden, reflected by endorsement of the Bone and Joint Decade 2000-2010 by the United Nations and WHO, is predicted to rise due to the ageing population. As such, identifying and promoting effective management strategies for these conditions has been flagged as a public health priority. Purpose: Whilst there is evidence that aquatic exercise is an effective strategy in the management of a number of musculoskeletal conditions, the relative benefits across conditions has not been reported as previous reviews have only focused on individual conditions. Therefore, the purpose of this study was to examine the effect of aquatic exercise on pain, physical function and quality of life in people with musculoskeletal conditions; and identify the effects across different conditions. Methods: Ovid MEDLINE, CINAHL, EMBASE and The Cochrane Central Register of Controlled Trials were searched from earliest record to May 2013 for randomized controlled trials and quasi-randomized controlled trials evaluating aquatic exercise for adults with musculoskeletal conditions compared to no exercise or land-based exercise. Outcomes of interest were pain, physical function and quality of life. Study quality was assessed using the Physiotherapy Evidence Database (PEDro) scale. Results: The electronic search identified 1199 potential studies. Of these, 1136 studies were excluded based on title and abstract. A further 36 studies were excluded after full text review and the remaining 26 studies were included in this review. The PEDro scale identified 20 studies with high methodological quality (PEDro score ≥ 6). Compared to no exercise, aquatic exercise achieved moderate improvements in pain (SMD -0.37, 95% CI -0.56 to -0.18), physical function (SMD 0.32, 95% CI 0.13 to 0.51) and quality of life (SMD 0.39, 95% CI 0.06 to 0.73). No significant differences were observed between the effects of aquatic and land-based exercise on pain (SMD -0.11, 95% CI -0.27 to 0.04), physical function (SMD -0.03, 95% CI -0.19 to 0.12) or quality of life (SMD -0.10, 95% CI -0.29 to 0.09). Conclusion(s): The studies included in this review were of high quality and demonstrate that aquatic exercise can have positive effects on pain, physical function and quality of life for adults with musculoskeletal conditions. However, there is further need for large scale trials of sufficient duration and an adequate follow-up period to validate the long-term effects of aquatic exercise. In addition, future trials need to examine different modes, frequency, intensity and participation in aquatic exercise programs so the characteristics of programs that achieve maximum benefits are well understood. Implications: Based on these findings, aquatic exercise can be recommended as an effective management strategy to reduce pain, and improve physical function and health-related quality of life in adults with musculoskeletal conditions. Outcomes following aquatic exercise appeared comparable to land based exercise indicating that when people are unable to exercise on

land, or find land based exercise difficult, aquatic exercise programs provide an effective alternative strategy.

Database: EMBASE

6. Efficacy of hydrotherapy versus land exercises for post-operative lumbar spine

Author(s): Praveen J.; Lim J.Y.P.; Pal P.; Sow S.; Pua P.Y.; Lange V.; Yiru L.

Source: Physiotherapy (United Kingdom); May 2015; vol. 101

Publication Date: May 2015

Publication Type(s): Conference Abstract

Abstract:Background: Significant pathology in low back pain patients warrants surgical intervention such as discectomy and minimal invasive spine surgery that includes transforaminal lumbar interbody fusion, anterior lumbar interbody fusion and posterior lumbar interbody fusion. Effective early post-operative physiotherapy management enables better functional outcomes and early return to work but this is often limited by patient's tolerance to axial loading. Therapeutic exercises in water reduce the axial spinal load facilitating early mobilisation especially in post-operative spinal care compared to land based exercises. Studies have shown positive effects of hydrotherapy in reducing pain, improving function, increasing muscle strength and early return to work in chronic low back pain patients. However, no such study has investigated the effects of hydrotherapy in postoperative spinal patients. Purpose: The aim of this study is to investigate the efficacy of hydrotherapy versus land based exercises for postoperative lumbar spine patients. Methods: Patients were recruited from out-patient physiotherapy clinic at Changi General Hospital. Subjects after 4 weeks of minimally invasive lumbar surgery with subjective pain score of less than 8/10 and ability to ambulate independently (with/without an aid) were included in the trial. The subjects attended 6 sessions of hydrotherapy or land based exercises over 6 consecutive weeks along with a set of home exercise program. Standardised post-operative treatment protocols were followed in both groups. Outcome measures include visual analog scale (VAS), Patient Specific Functional Scale (PSFS), Oswestry Disability Index (ODI) and 10 meter walk test and were measured at baseline and end of trial. Results: A total of 16 subjects (hydrotherapy n = 8; land based n = 8) were included with a mean age of 52.5 years (+/-13.9) and body mass index of 25.0 (+/- 5.3) kg/m². Mann Whitney U test revealed a statistically significant improvement for pain (p = 0.04) in hydrotherapy group compared to land group (1.5+/-1.7 vs 3.5+/-1.8). However, no significant difference was identified in PSFS (standing, walking and bending), ODI and 10 meter walk test. Conclusion(s): Hydrotherapy is found to be effective in reducing pain compared to land based exercises. However, it is not superior to land based exercises in terms of functional outcome measures. Implications: Patients after lumbar spine surgeries will benefit from hydrotherapy with the primary objective of pain relief although the functional outcomes remains similar compared to land based exercises. A restricted sample size, phobia of water, cultural beliefs and cautious nature in hydrotherapy limits the comprehensive understanding of the effects of hydrotherapy. Future studies should further explore the functional outcomes of hydrotherapy in post-operative spine cases.

Database: EMBASE

7. Effectiveness of balneotherapy and spa therapy for the treatment of chronic low back pain: a review on latest evidence.

Author(s): Karagülle, Mine; Karagülle, Müfit Zeki

Source: Clinical rheumatology; Feb 2015; vol. 34 (no. 2); p. 207-214

Publication Date: Feb 2015

Publication Type(s): Journal Article Review

PubMedID: 25535198

Available in full text at [Clinical Rheumatology](#) - from ProQuest

Abstract:In most European countries, balneotherapy and spa therapy are widely prescribed by physicians and preferred by European citizens for the treatment of musculoskeletal problems including chronic low back pain (LBP). We aimed to review and evaluate the recent evidence on the effectiveness of balneotherapy and spa therapy for patients with LBP. We comprehensively searched data bases for randomized controlled trials (RCTs) published in English between July 2005 and December 2013. We identified all trials testing balneotherapy or spa therapy for LBP that reported that the sequence of allocation was randomized. We finally included total of eight RCTs: two on balneotherapy and six on spa therapy. All reviewed trials reported that balneotherapy was superior in long term to tap water therapy in relieving pain and improving function and that spa therapy combining balneotherapy with mud pack therapy and/or exercise therapy, physiotherapy, and/or education was effective in the management of low back pain and superior or equally effective to the control treatments in short and long terms. We used Jadad scale to grade the methodological quality. Only three out of total eight had a score of above 3 indicating the good quality. The data from the RCTs indicates that overall evidence on effectiveness of balneotherapy and spa therapy in LBP is encouraging and reflects the consistency of previous evidence. However, the overall quality of trials is generally low. Better quality RCTs (well designed, conducted, and reported) are needed testing short- and long-term effects for relieving chronic back pain and proving broader beneficial effects.

Database: Medline

8. The optimal frequency of aquatic physiotherapy for individuals with chronic musculoskeletal pain: a randomised controlled trial.

Author(s): Cuesta-Vargas, Antonio I.; White, Melanie; González-Sánchez, Manuel; Kuisma, Raija

Source: Disability & Rehabilitation; Feb 2015; vol. 37 (no. 4); p. 311-318

Publication Date: Feb 2015

Publication Type(s): Academic Journal

PubMedID: 24819432

Abstract:Purpose: To establish whether there was a difference in health-related quality of life (HRQoL) in people with chronic musculoskeletal disorders (PwCMSKD) after participating in a multimodal physiotherapy program (MPP) either two or three sessions a week. Methods: Total of 114 PwCMSKD participated in this prospective randomised controlled trial. An individualised MPP, consisting of exercises for mobility, motor-control, muscle strengthening, cardiovascular training, and health education, was implemented either twice a week (G2: n = 58) or three times a week (G3: n = 56) for 1 year. Outcomes: HRQoL physical and mental health state (PHS/MHS), Roland Morris disability Questionnaire (RMQ), Neck-Disability-Index (NDI) and Western Ontario and McMaster Universities' Arthritis Index (WOMAC) were used to measure outcomes of MPP for people with chronic low back pain, chronic neck pain and osteoarthritis, respectively. Measures were taken at baseline, 8 weeks (8 w), 6 months (6 m), and 1 year (1 y) after starting the programme. Results: No

statistically significant differences were found between the two groups (G2 and G3), except in NDI at 8 w (-3.34, (CI 95%: -6.94/0.84, $p = 0.025$ (scale 0-50)). All variables showed improvement reaching the following values (from baseline to 1 y) G2: PHS: 57.72 (baseline: 41.17; (improvement: 16.55%), MHS: 74.51 (baseline: 47.46, 27.05%), HRQoL 0.90 (baseline: 0.72, 18%), HRQoL-VAS 84.29 (baseline: 58.04, 26.25%), RMQ 4.15 (baseline: 7.85, 15.42%), NDI 3.96 (baseline: 21.87, 35.82%), WOMAC 7.17 (baseline: 25.51, 19.10%). G3: PHS: 58.64 (baseline: 39.75, 18.89%), MHS: 75.50 (baseline: 45.45, (30.05%), HRQoL 0.67 (baseline: 0.88, 21%), HRQoL-VAS 86.91 (baseline: 52.64, 34.27%), RMQ 4.83 (baseline: 8.93, 17.08%), NDI 4.91 (baseline: 23.82, 37.82%), WOMAC 6.35 (baseline: 15.30, 9.32%). Conclusions: No significant differences between the two groups were found in the outcomes of a MPP except in the NDI at 8 weeks, but both groups improved in all variables during the course of 1 year under study.

Database: CINAHL

9. Effectiveness of back school program versus hydrotherapy in elderly patients with chronic non-specific low back pain: A randomized clinical trial

Author(s): Costantino C.; Romiti D.

Source: Acta Biomedica; 2014; vol. 85 ; p. 52-61

Publication Date: 2014

Publication Type(s): Article

PubMedID: 25409719

Abstract:Background and aim of the work: Chronic low back pain (CLBP) is a major cause of disability, for which clinical practice guidelines suggest exercise programs, such as Back School program (stretching and selective muscle reinforcement techniques) and Hydrotherapy technique, as an effective treatment to reduce pain intensity and disability. Methods: We enrolled 56 elderly individuals, affected by non-specific CLBP, whose pain had worsened in the last three months, which were randomly allocated to Back School (group A) or to Hydrotherapy program (group B). Each group underwent two one-hour-treatment sessions per week, over a 12-week period. Each patient was evaluated using the Roland Morris Disability Questionnaire (RMDQ) and the 36-Item Short Form Health Survey (SF-36) V2.0 at the beginning (T0), at the end of treatment (T1) and at the 3-month follow-up (T2). Results: At T1 and T2 we observed a highly significant statistical difference in the values measured in both groups: at T1 in group A RMDQ improvement of 3.26 ± 1.02 ($p < 0.001$) and SF-36 of 13.30 ± 1.44 ($p < 0.001$); in group B RMDQ improvement of 4.96 ± 0.71 ($p < 0.001$) and SF-36 of 14.19 ± 1.98 ($p < 0.001$). We have also evaluated the difference in effectiveness of the two programs and no significant statistical differences were found between the two groups. Conclusions: Back School program and Hydrotherapy could be valid treatment options in the rehabilitation of non-specific CLBP in elderly people. Both therapies proved to be effective and can be used in association with other rehabilitation programs. We believe that Back School program should be favored for its simplicity and the small number of resources required. Copyright © Mattioli 1885.

Database: EMBASE

10. Aquatic therapy improves pain, disability, quality of life, body composition and fitness in sedentary adults with chronic low back pain. A controlled clinical trial.

Author(s): Baena-Beato, Pedro Ángel; Artero, Enrique G; Arroyo-Morales, Manuel; Robles-Fuentes, Alejandro; Gatto-Cardia, María Claudia; Delgado-Fernández, Manuel

Source: Clinical rehabilitation; Apr 2014; vol. 28 (no. 4); p. 350-360

Publication Date: Apr 2014

Publication Type(s): Research Support, Non-u.s. Gov't Controlled Clinical Trial Journal Article

PubMedID: 24177712

Available in full text at [Clinical Rehabilitation](#) - from ProQuest

Abstract:OBJECTIVE To determine the effects of a two-month intensive aquatic therapy programme on back pain, disability, quality of life, body composition and health-related fitness in sedentary adults with chronic low back pain. DESIGN Controlled clinical trial. SETTING Community. SUBJECTS Forty-nine sedentary patients with chronic low back pain. INTERVENTIONS Patients were allocated into active group (n = 24, two months, five times/week) or waiting list, control group (n = 25) according to space on the programme. MAIN MEASURES Outcomes variables were pain (visual analogue scale), disability (Oswestry Disability Index), quality of life (Quality Short-Form Health Survey 36), body composition (weight, body mass index, body fat percentage and skeletal muscle mass) and health-related fitness (sit-and-reach, handgrip strength, curl-up, Rockport 1-mile test). RESULTS The active group significantly improved low back pain (-3.83 ± 0.35 mm on the visual analogue scale), disability (-12.7 ± 1.3 points for the Oswestry Disability Index) and the standardized physical component (10.3 ± 1.4 points for the Quality Short-Form Health Survey 36) of quality-of-life domains ($P < 0.001$), with no significant changes on the standardized mental component ($P = 0.114$). In relation to body composition and fitness, the active group showed significant improvements (all P -values < 0.01). The control group presented no significant change in any parameter. CONCLUSIONS A two-month intensive aquatic therapy programme of high-frequency (five times/week) decreases levels of back pain and disability, increases quality of life, and improves body composition and health-related fitness in sedentary adults with chronic low back pain.

Database: Medline

11. Hydrotherapy results in reduced pain and fatigue in patients with arthritis

Author(s): O'Connor C.; Mc Gowan B.; Whelan B.; Silke C.; Dunne Shannon U.

Source: Irish Journal of Medical Science; Apr 2014; vol. 183 (no. 3)

Publication Date: Apr 2014

Publication Type(s): Conference Abstract

Available in full text at [Irish journal of medical science \[Ir J Med Sci\]](#) NLMUID: 7806864 - from EBSCOhost

Abstract:Introduction: Hydrotherapy, involving physiotherapy in a heated pool with the temperature ranging from 32-36 °C, is thought to give rise to decreased pain, sensation, decreased stiffness of the musculoskeletal system, and causes muscle relaxation. Aims/background: To establish the effectiveness of hydrotherapy in rheumatology patients with chronic pain. Method: Short-term effects of hydrotherapy on fatigue and pain were studied, using the FACIT Fatigue Scale (version 4) and a Quadruple Visual Analogue Scale (current/typical/best/worst pain). Surveys were given to 24 rheumatology inpatients before and after 3 days of hydrotherapy. Patients' diagnoses included osteoarthritis, rheumatoid arthritis, degenerative disc disease, psoriatic arthritis and lupus. A literary review of existing randomised controlled trials or quasi-randomised clinical trials using the Cochrane

Library was also carried out. Results: Of the 24 patients a 17 % (p 0.004) reduction in fatigue and a 9 % (p 0.13) reduction in pain was obtained. Randomised control studies showed that a statistically significant improvement in physical function, pain, mental health and quality of life, when compared to a control group but in a 6 month follow-up randomized control trial reporting on this lasting effectiveness, benefits were not shown to last more than 6 months, suggesting that hydrotherapy may be better used on more of a continuum than a once off treatment [1]. Conclusions: In conclusion, hydrotherapy is an excellent base on which to start physiotherapy before commencing land-based programmes and may be continued to preserve improvements seen at the end of initial hydrotherapy. Further studies looking at the longer term impact of hydrotherapy intervention are planned.

Database: EMBASE

12. Aquatic exercise training for fibromyalgia: A systematic review

Author(s): Bidonde J.; Busch A.J.; Schachter C.; Webber S.; Danyliw A.; Overend T.; Richards R.; Rader T.

Source: Arthritis and Rheumatism; Oct 2013; vol. 65

Publication Date: Oct 2013

Publication Type(s): Conference Abstract

Available in full text at [Arthritis and rheumatism \[Arthritis Rheum\] NLMUID: 0370605](#) - from EBSCOhost

Abstract:Background/Purpose: Fibromyalgia (FM) is a chronic pain condition leading to reduced physical function. Exercise training is recommended for people with FM. We examined randomized controlled trials (RCTs) to evaluate benefits and harms of aquatic exercise training (AQ) in adults with FM. Methods: We searched 9 electronic databases. Selection criteria included full text publication of an RCT of AQ for adults diagnosed with FM, and provision of between-group outcome data. Studies were excluded if exercise in water was <50% of the full intervention. Pairs of reviewers independently screened and selected articles, assessed risk of bias, and extracted data on 24 outcomes in 4 domains: wellness, symptoms, physical fitness and adverse effects. Discordance was resolved through discussion. Benefits and harms of the interventions were evaluated using standardized mean differences (SMD) and 95% CI, with meta-analysis carried out when applicable. Results: We screened 1856 citations, 766 abstracts, and 156 fulltext articles. Fourteen RCTs examined AQ with a total of 820 participants. AQ was compared to control (9 studies) and to land exercise (5 studies). Risk of bias was rated low for randomization, incomplete outcome data, selective reporting, other bias, and blinding of outcome assessors. Allocation concealment, and blinding of participants and care providers were rated as unclear or high risk. Differences (SMD [95% CI]) between the AQ vs control were: multidimensional function -0.55 [-0.83, -0.27], self-reported physical function -0.44 [-0.76, -0.11], pain -0.53 [-0.76, -0.31], stiffness -1.08 [-2.05, -0.11], strength 0.63 [0.20, 1.05], and cardiovascular submaximal function 0.56 [0.27, 0.85] all favouring AQ (p < 0.05). Attrition was similar in AQ and control groups. Adverse effects were poorly reported, with no serious adverse effects reported. Differences (SMD [95%CI] for AQ compared to land exercise were: strength -0.74 [-1.44, -0.04] favoring land, and sleep -0.75 [-1.32, -0.17] favoring AQ. Older participants with longer disease duration and less pain/impact of disease at baseline responded better to AQ than their counterparts. Greater exercise frequency, accumulated pool time, and length of program were also associated with better results Conclusion: Low to moderate quality evidence suggests that AQ is beneficial for improving wellness, symptoms and fitness and that no serious adverse effects result from the intervention. Very low to moderate quality evidence suggests that there are no differences in benefits between AQ and land exercise except in muscle strength (evidence favoring land) and sleep (one study favoring aquatic). **Database:** EMBASE

13. A warm water pool-based exercise program decreases immediate pain in female fibromyalgia patients: uncontrolled clinical trial.

Author(s): Segura-Jiménez, V; Carbonell-Baeza, A; Aparicio, V A; Samos, B; Femia, P; Ruiz, J R; Delgado-Fernández, M

Source: International journal of sports medicine; Jul 2013; vol. 34 (no. 7); p. 600-605

Publication Date: Jul 2013

Publication Type(s): Research Support, Non-u.s. Gov't Clinical Trial Journal Article

PubMedID: 23258608

Abstract: Fibromyalgia is characterized by chronic and extended musculoskeletal pain. The combination of exercise therapy with the warm water may be an appropriate treatment. However, studies focusing on the analysis of immediate pain during and after an exercise session are rare. This study aimed to determine the immediate changes of a warm water pool-based exercise program (12 weeks) on pain (before vs. after session) in female fibromyalgia patients. 33 Spanish women with fibromyalgia were selected to participate in a 12 weeks (2 sessions/week) low-moderate intensity warm water pool-based program. We assessed pain by means of a Visual Analogue Scale before and after each single session (i. e., 24 sessions). We observed immediate benefits on pain with a mean decrease ~15% in all sessions, except in the fourth one. There was an association of pain difference (pre-post) session with pain pre session ($p=0.005$; $\beta=0.097\pm 0.034$) and with age ($p<0.05$). Therefore this study showed that a warm water pool-based exercise program for 12 weeks (2 times/week) led to a positive immediate decrease in level of pain in female patients with fibromyalgia. Improvements were higher in older women and in those with more intense pain.

Database: Medline

14. Are multidisciplinary inpatient rehabilitation programmes effective for chronic musculoskeletal conditions?: A service evaluation

Author(s): Mccuish W.J.; Bearne L.

Source: Annals of the Rheumatic Diseases; Jun 2013; vol. 72

Publication Date: Jun 2013

Publication Type(s): Conference Abstract

Available in full text at [Annals of the Rheumatic Diseases](#) - from ProQuest

Available in full text at [EULAR Meeting Abstracts](#) - from Highwire Press

Available in full text at [Annals of the Rheumatic Diseases](#) - from Highwire Press

Abstract: Background Chronic musculoskeletal (MSK) conditions impair health and function. Clinical guidelines recommend a Multidisciplinary Team (MDT) approach for the optimum management of chronic MSK conditions. The efficacy of inpatient MDT care on the health and disease status of people with chronic musculoskeletal conditions is unclear. Objectives To evaluate the efficacy of a MDT inpatient service for people with chronic musculoskeletal conditions. Methods Patients with Rheumatoid Arthritis (RA), Osteoarthritis (OA), Low Back Pain (LBP) and Chronic Widespread Pain (CWP) admitted for inpatient MDT rehabilitation to a rheumatology unit in a UK hospital completed the Multi-Dimensional Health Assessment Questionnaire (MDHAQ)¹, visual analogue scale (VAS 0-10cm) for pain and for global wellbeing on admission and discharge. The rehabilitation programme consisted of a personalised regime of exercise including hydrotherapy and MDT input. RAPID3 scores (Routine Assessment of Patient Index Data)¹ were calculated then analysed using descriptive statistics and paired sample t-tests. A 20% improvement in RAPID3 was considered a clinically

significant change. Results 183 patients (Mean Age 62 [Range 18-97], 145 females) were admitted (median length of stay 10 days [Range 5-15]) between January 2010 and September 2011. Overall there was a 28% improvement in RAPID3 (mean difference 5.01 [4.3, 5.8] (95%CI), $P < 0.05$) on discharge. Clinically significant changes were noted in people with RA (32%), OA (35%), CWP (25%) and LBP (22%) (all $P < 0.05$, Table). Conclusions This inpatient MDT rehabilitation programme improved self reported disease status and function in patients with RA, OA, LBP and CWP. The long term efficacy and cost effectiveness of inpatient MDT care requires further investigation.

Database: EMBASE

15. Hydrotherapy in the management of chronic pain

Author(s): O'Connor C.; Haithem M.; Browne P.; Silke C.; Whelan B.

Source: Irish Journal of Medical Science; Jun 2013; vol. 182

Publication Date: Jun 2013

Publication Type(s): Conference Abstract

Available in full text at [Irish journal of medical science \[Ir J Med Sci\] NLMUID: 7806864](#) - from EBSCOhost

Abstract: Hydrotherapy, involving physiotherapy in a heated pool with the temperature ranging from 32 degree-36 degreeC, is thought to give rise to decreased pain sensation, decreased stiffness of the musculoskeletal system, and causes muscle relaxation. In this study the aim is to establish the effectiveness of hydrotherapy in rheumatology patients with chronic pain. In the rheumatology Rehabilitation Centre at Our Lady's Hospital, Manorhamilton the short-term effects of hydrotherapy on fatigue and pain were studied, using the FACIT Fatigue Scale (version 4) and a Quadruple Visual Analogue Scale (current/typical/best/worst pain). Surveys were given to 24 rehabilitation inpatients before and after 3 days of hydrotherapy. Patients' diagnoses included osteoarthritis, rheumatoid arthritis, degenerative disc disease, psoriatic arthritis and lupus. A literary review of existing randomised controlled trials or quasi-randomised clinical trials using the Cochrane Library was also carried out. Of the 24 patients a 17 % ($p = 0.004$) reduction in fatigue and a 9 % ($p = 0.13$) reduction in pain was obtained. Randomised control studies showed that a statistically significant improvement in physical function, pain, mental health and quality of life, when compared to a control group but in a 6 month follow-up randomized control trial reporting on this lasting effectiveness, benefits were not shown to last more than 6 months, suggesting that hydrotherapy may be better used on more of a continuum than a once off treatment [1]. In conclusion, hydrotherapy is an excellent base on which to start physiotherapy before commencing land-based programmes and may be continued to preserve improvements seen at the end of initial hydrotherapy.

Database: EMBASE

16. Effects of different frequencies (2-3 days/week) of aquatic therapy program in adults with chronic low back pain. A non-randomized comparison trial.

Author(s): Baena-Beato, Pedro Angel; Arroyo-Morales, Manuel; Delgado-Fernández, Manuel; Gatto-Cardia, Maria Claudia; Artero, Enrique G

Source: Pain medicine (Malden, Mass.); Jan 2013; vol. 14 (no. 1); p. 145-158

Publication Date: Jan 2013

Publication Type(s): Research Support, Non-u.s. Gov't Controlled Clinical Trial Journal Article

PubMedID: 23279214

Available in full text at [Pain medicine: the official journal of the American Academy of Pain Medicine \[Pain Med\] NLMUID: 100894201](#) - from EBSCOhost

Abstract:OBJECTIVE To study the effects of an aquatic therapy program with different frequencies (2 vs 3 days per week) in chronic low back pain. DESIGN [corrected] Non-randomized comparison trial. SETTINGS Sport and spa community health club. SUBJECTS Fifty-four adults with chronic low back pain (48.9 ± 10.0 years). INTERVENTION Eight-week aquatic therapy program. OUTCOME MEASURES Pain (visual analog scale [VAS]), disability (Oswestry Disability Index), and quality of life (Short-Form Health Survey 36), body composition (weight, body mass index, body fat mass, body fat percentage, and skeletal muscle mass), and health-related fitness (sit and reach, handgrip strength, curl-up, Rockport 1-mile test). RESULTS Both experimental groups presented significant improvements in low back pain and disability ($P < 0.001$) compared with control group. The 3 days/week group showed significantly greater benefits at VAS flexion and disability ($P < 0.001$) than the 2 days/week group. Regarding quality of life, both intervention groups presented significant differences for Physical Role ($P < 0.05$), Bodily Pain ($P < 0.001$), General Health ($P = 0.012$), and Standardized Physical Component ($P < 0.001$) compared with control group. Both experimental groups significantly improved all health-related fitness parameters ($P < 0.01$). The 3 days/week group showed significantly greater benefits at curl-up and heart rate ($P < 0.001$) than the 2 days/week group. No significant changes between treatment groups and control were found in body composition. CONCLUSION Eight weeks of aquatic therapy program decrease levels of back pain and disability, increase quality of life, and improve health-related fitness in adults with chronic low back pain without effects in body composition. A dose-response effect was observed in some parameters, with greater benefits when exercising 3 days per week compared with 2 days.

Database: Medline

17. Deep water running and general practice in primary care for non-specific low back pain versus general practice alone: Randomized controlled trial

Author(s): Cuesta-Vargas A.I.; Adams N.; Salazar J.A.; Belles A.; Hazanas S.; Arroyo-Morales M.

Source: Clinical Rheumatology; Jul 2012; vol. 31 (no. 7); p. 1073-1078

Publication Date: Jul 2012

Publication Type(s): Article

PubMedID: 22453844

Available in full text at [Clinical Rheumatology](#) - from ProQuest

Available in full text at [Clinical rheumatology \[Clin Rheumatol\]](#) NLMUID: 8211469 - from EBSCOhost

Abstract: There is equivocal evidence regarding the benefits of aquatic aerobic exercise for non-specific chronic low back pain (NSCLBP) in addition to standard care in general practice consisting of education and advice. The purpose of this study was to compare the addition of deep water running (DWR) to standard general practice (GP) on NSCLBP versus GP care alone on pain, physical and mental health and disability. In this single-blind randomised controlled trial, 58 subjects with NSCLBP were recruited from primary care. The control group received GP care consisting of a physician's consultation and educational booklet only. The experimental group received additional 30-min sessions of DWR three times a week for 15 weeks at the individualized aerobic threshold.

Measurements were made pre- and postintervention and at 1-year follow-up. Both groups showed improvement. The difference between treatment effects at longest follow-up of 1 year was -26.0 (-40.9 to -11.1) mm on the VAS ($p < 0.05$), -2.5 (-5.7 to -0.2) points in RMQ for disability ($p < 0.05$), 3.3 (10.0 to 24.7) points on physical health in the physical summary component of the Spanish Short Form 12 (SF-12; $p < 0.05$) and 5.8 (8.6 to 34.7) points on the mental summary component of the SF-12 ($p < 0.05$), in favour of the DWR group. For patients with NSCLBP, the addition of DWR to GP was more effective in reducing pain and disability than standard GP alone, suggesting the effectiveness and acceptability of this approach with this group of patients. © Clinical Rheumatology 2012.

Database: EMBASE

18. Aquatic physiotherapy in the inpatient setting

Author(s): Guille S

Source: Aqualines-Newsletter of the Hydrotherapy Ass of Chartered Physiotherapists; 2011; vol. 23 (no. 2); p. 4-20

Publication Date: 2011

Publication Type(s): Journal Article

Abstract:Background: The purpose of this literature review was to search for and appraise the quality of all research evidence supporting the use of aquatic physiotherapy in the inpatient setting. There is growing evidence for the use of aquatic physiotherapy in outpatient populations. By contrast, aquatic rehabilitation in the inpatient setting remains largely understudied. Method: Ten medical and allied health databases were systematically searched and relevant trials were critically appraised using recognised critical review protocols. Results: 7 trials were appropriate for inclusion and their methodological quality was analysed. Moderate to high quality evidence exists to support the use of aquatic physiotherapy in early post-operative lower limb joint arthroplasty for benefit in muscle strength and self-reported functional measures. There is low level evidence for the application of aquatic physiotherapy in neurological populations to reduce spasticity and medication use. While three case studies involving patients with orthopaedic and neuromuscular debility offer poor research merit, they indicate positive outcome trends for the use of aquatic physiotherapy in complex conditions. Conclusion: More evidence is required to investigate the specific benefits of aquatic physiotherapy as compared to land based treatment or general water exercise in acute patient populations.

Database: AMED

19. Efficacy of aquatic rehabilitation for chronic and recurrent back pain

Author(s): Mihailov M.V.; Pascalau N.; Popa D.M.

Source: Osteoporosis International; May 2010; vol. 21

Publication Date: May 2010

Publication Type(s): Conference Abstract

Available in full text at [Osteoporosis international: a journal established as result of cooperation between the European Foundation for Osteoporosis and the National... \[Osteoporos Int\] NLMUID: 9100105](#) - from EBSCOhost

Available in full text at [Osteoporosis International](#) - from ProQuest

Abstract:Aims: The conservative treatment of low back pain includes balneophysical therapy; the chronicity of the condition and the severity of symptoms influence the outcome of therapy. The aim was to determine the effectiveness of aquatic rehabilitation for outpatients with chronic or recurrent back pain for a period of 6 weeks in Medical Rehabilitation Hospital Felix Spa. Design: randomized, controlled observational study. Setting: outpatient setting. Methods: A total of 102 patients with recurrent or chronic back pain, were randomized in control (n=50) and study group (n=52). Interventions: the control group: complex rehabilitation treatment, 3 times weekly for 6 weeks, including physiotherapy, massage and pain relief medication. Study group: the same program applied completed with exercise and hydrokine to therapy in oligo mineral thermal waters. Outcome measures: Disability measured using the Roland Morris Disability Questionnaire. Assessments: at baseline, at the end of the treatment and after 3 months. Data analysis: Paired t - Student test, effect size for the Roland Morris Score to describe the magnitude of the clinical changes. Results: Little change occurred in Roland Disability Score in the control group. Significant reductions took

place for all interventions for Roland Disability Score in the study group at the end of the treatment. The study group had better values 3 month after the end of rehabilitation compared to baseline whereas the control group had already declined to values. Conclusions: The rehabilitation program including hydrokinotherapy in oligomineral thermal water induce beneficial longterm effects in low back pain although the underlying mechanisms are not yet fully understood.

Database: EMBASE

20. Rehabilitation of a cardiopulmonary compromised individual status-post total hip arthroplasty utilizing a combined land and aquatic based program: a case report.

Author(s): Costa B; Wilmarth MA; Glynn PE

Source: Journal of Aquatic Physical Therapy; Sep 2009; vol. 17 (no. 2); p. 12-19

Publication Date: Sep 2009

Publication Type(s): Periodical

Abstract:Background and Purpose. Interventions for patients with total hip arthroplasties (THA) typically include therapeutic exercise and functional mobility training. The purpose of this case report is to discuss the benefits of aquatic treatments in addition to land treatments for these patients in the acute rehabilitation setting. Case Description and Methods. The patient is an 82-yearold female with a right THA admitted to an acute rehabilitation hospital. Interventions included land therapy and aquatic therapy. Outcomes. The patient demonstrated improvements in range of motion, strength, girth and pain. The patient met long term PT goals and was discharged to her home with services. Discussion. The patient demonstrated improvements in impairments and functional limitations with 7 days of interventions, the latter 4 being land and aquatic therapy. Aquatic therapy is an important intervention which should be incorporated into the plan of care of patients who are post-operative THA in the acute rehabilitation setting.

Database: CINAHL

21. Clinical effectiveness of aquatic exercise to treat chronic low back pain

Author(s): Dundar U; Solak O; Yigit I; Evcik D; Kavuncu V

Source: Spine; Jun 2009; vol. 34 (no. 14); p. 1436-40

Publication Date: Jun 2009

Publication Type(s): Randomized Controlled Trial

Abstract:Study Design. This study was a prospective, randomized, controlled study. Objective To compare the effectiveness of aquatic exercise interventions with land-based exercises in the treatment of chronic low back pain (CLBP). Summary of Background Data. Land-based exercise and physiotherapy are the main treatment tools used for CLBP. Clinical experience indicates that aquatic exercise may have advantages for patients with musculoskeletal disorders. Methods A total of 65 patients with CLBP were included in this study. Patients were randomly assigned to receive aquatic exercise or land-based exercise treatment - protocol. Aquatic exercise program consisted of 20 sessions, 5 x per week for 4 weeks in a swimming pool at 33 degrees C. Land-based exercise (home-based exercise) program were demonstrated by a physiotherapist on one occasion and then they were given written advice The patients were assessed for spinal mobility, pain, disability, and quality of life. Evaluations were performed before treatment (week 0) and after treatment (week 4 and week 12). Results, In both groups, statistically significant improvements were detected in all outcome measures (except modified Schober test) compared with baseline. However, improvement in modified Oswestry Low Back Pain Disability questionnaire and physical function and role limitations due to physical functioning subpart of Short-Form 36 Health Survey were better in

aquatic exercise group ($P < 0.05$). Conclusion. It is concluded that a water-based exercises produced better improvement in disability and quality of life of the patients with CLBP than land-based exercise.

Database: AMED

22. The addition of aquatic therapy to rehabilitation following surgical rotator cuff repair: a feasibility study.

Author(s): Brady B; Redfern J; Macdougall G; Williams J

Source: Physiotherapy Research International; Sep 2008; vol. 13 (no. 3); p. 153-161

Publication Date: Sep 2008

Publication Type(s): Academic Journal

PubMedID: 18548557

Available in full text at [Physiotherapy Research International](#) - from EBSCOhost

Available in full text at [Physiotherapy research international: the journal for researchers and clinicians in physical therapy \[Physiother Res Int\]](#) NLMUID: 9612022 - from EBSCOhost

Abstract:Background and Purpose. Rotator cuff tears are frequently encountered in medical outpatient settings and often require surgical repair to achieve desirable functional outcomes. However, the optimal form of post-operative rehabilitation of rotator cuff repairs remains unidentified by the research literature. The aim of this study was to determine the feasibility of implementing and investigating the effect of a combined aquatic and land-based rehabilitation programme in the post-operative rehabilitation of rotator cuff tears. Methods. A cohort of 18 subjects undergoing rotator cuff repair were examined over a treatment period of 12 weeks. Twelve subjects participated in a combined aquatic and land-based programme, while six subjects received a standard land-based protocol. Passive range of motion and the Western Ontario Rotator Cuff Index outcomes were measured pre-operatively and at three, six and 12 weeks, post-operatively. Subjective responses on patient's assurance and confidence in the value of the exercises (questionnaire using an 11-point Visual Analogue Scale (VAS)) were collected at 12 weeks for both groups. Results. There was a significant improvement in both range of motion and Western Ontario Rotator Cuff scores in all subjects with treatment ($p < 0.001$). Furthermore, participation in aquatic therapy significantly improved passive flexion range of motion measures at three weeks (mean 46° , 95% CI 17-75, $p = 0.005$) and six weeks (30° , 95% CI 8-51, $p = 0.01$). There was no significant difference in the attendance rates (80% in both groups) or patients perceptions of the programmes (100% confidence and assurance in both groups). Conclusion. The implementation of a combined aquatic and land-based physiotherapy programme following surgical repair of the rotator cuff is feasible and presents a potential viable alternative to conventional land-based exercise with comparable outcomes. Copyright © 2008 John Wiley & Sons, Ltd.

Database: CINAHL

23. Land- and water-based exercise therapies for musculoskeletal conditions

Author(s): Dziedzic K.; Jordan J.L.; Foster N.E.

Source: Best Practice and Research: Clinical Rheumatology; Jun 2008; vol. 22 (no. 3); p. 407-418

Publication Date: Jun 2008

Publication Type(s): Review

PubMedID: 18519096

Abstract: This chapter summarizes current evidence from recently published systematic reviews of land- and water-based exercise therapies for musculoskeletal conditions. The aim is to present an overview of the evidence and highlight gaps where more research is still needed. This is not a systematic review, but a systematic search of the literature and a summary of results of the best, most recent systematic reviews evaluating interventions for musculoskeletal conditions. There have been two previous summaries of systematic reviews of evidence for exercise therapies in musculoskeletal conditions. We have updated these searches, and additionally considered the evidence for the clinical effectiveness of exercise in fibromyalgia and chronic widespread pain and of hydrotherapy and water-based exercise treatments on pain and disability. © 2008 Elsevier Ltd. All rights reserved.

Database: EMBASE

24. Comparison of the effects of exercise in water and on land on the rehabilitation of patients with intra-articular anterior cruciate ligament reconstructions

Author(s): Tovin B.J.; Wolf S.L.; Greenfield B.H.; Crouse J.; Woodfin B.A.

Source: Physical Therapy; 1994; vol. 74 (no. 8); p. 710-719

Publication Date: 1994

Publication Type(s): Article

PubMedID: 8047560

Available in full text at [Physical Therapy](#) - from Highwire Press

Abstract: Background and Purpose. Exercises in water have been shown to be effective for improving strength and passive range of motion (PROM). Traditional rehabilitation following intra-articular anterior cruciate ligament (ACL) reconstruction has taken place on land. This study was designed to compare the effects of exercises in water on strength and girth of the thigh musculature, knee PROM, joint laxity, effusion, and functional outcome with the effects of similar exercises on land in subjects following intra-articular reconstruction of the ACL. Subjects. Twenty subjects were randomly assigned to either a group that exercised on land or a group that exercised in water. Methods. Thigh girth, joint effusion, and knee PROM measurements were recorded at 2-week intervals for the first 8 weeks post-operatively. Isokinetic and isometric peak torque measurements for the thigh musculature, knee joint laxity assessments, and Lysholm scores were obtained at the end of 8 weeks. Results. Higher outcome scores were recorded in the water group than in the land group, as measured by Lysholm scales. No differences were noted between groups for knee PROM, thigh girth, or quadriceps femoris muscle performance. In the water group, less joint effusion was noted after the 8 weeks. In the land group, greater peak torque for isokinetic knee flexion was recorded. Conclusion and Discussion. Although exercise in water may not be as effective as exercise on land for regaining maximum muscle performance, rehabilitation in water may minimize the amount of joint effusion and lead to greater self-reports of functional improvement in subjects with intra-articular ACL reconstructions.

Database: EMBASE



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