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Dissertação apresentada para a obtenção do Grau de Mestre em Exercício e Bem-estar, no Curso de Mestrado em Exercício e Bem-estar variante Exercício, Nutrição e Saúde, conferido pela Universidade Lusófona e Tecnologias

Orientador: Prof. Doutor António Palmeira

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Lute com determinação, abrace a vida com paixão, perca com classe e vença com ousadia, porque o mundo pertence a quem se atreve e a vida é muito para ser insignificante

Charles Chaplin

Só existem dois dias no ano em que nada pode ser feito. Um chama-se ontem e o outro amanhã, portanto hoje é o dia certo para amar, acreditar, fazer e principalmente viver

Dalai Lama

DEDICATÓRIA

Dedico esta dissertação de mestrado

Aos meus utentes de Hidroterapia, pois foi por eles que a fiz e por querer saber mais acerca da efectividade do programa de Hidroterapia "Acqua Lusa", o que os motiva a realizarem Hidroterapia, que tipos de motivação "os move" e se há associação entre estes e os resultados na dor, função e qualidade de vida.

Ao meu sábio tio, meu pai, que sempre me incentivou o gosto pelo conhecimento, pela leitura e a ser curiosa e persistente. À minha querida e meiga tia, a frágil e forte mãe que tive e que sempre me mostrou que "amar é dar, sem esperar receber".

Aos meus filhos pela paciência que tiveram e pelas horas que lhes "roubei" em que poderia ter estado com eles.

Ao meu "namorido" pela ajuda, apoio e carinho que me deu ao longo desta etapa.

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Às minhas colegas, Fisioterapeutas da Palmela Desporto E.M., pela colaboração diária junto aos clientes na entrega de questionários e recolha de dados.

Ao meu colega César Sá que me ajudou a deixar de ter medo dum "papão" chamado SPSS.

Às administrativas das Piscinas de Palmela e Pinhal Novo, que participaram diariamente na recolha dos questionários e que sempre mostraram disponibilidade e paciência para os meus pedidos " de última hora".

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Por último, a todos os meus clientes de Hidroterapia que participaram, durante 13 semanas, neste estudo.

Obrigada a todos!

Resumo

A dor crónica (DC) é uma das principais causas de incapacidade. A hidroterapia (HT) e exercício apresentam-se efectivos na diminuição da DC, contudo continuamos a assistir a uma fraca adesão e manutenção aos mesmos.

Este trabalho teve como objectivo analisar a associação entre motivação para HT e a DC, função e qualidade de vida, em adultos e idosos, com base na teoria da autodeterminação, efectuando uma revisão sistemática da literatura (RSL) e avaliando a dinâmica motivacional, durante 13 semanas de implementação de um programa de HT.

Realizou-se uma RSL, sobre a evidência da HT na DC, com base em estudos do tipo "randomized controlled trials" (RCT`s) e de artigos sobre motivação e / ou adesão para HT, com diversas abordagens metodológicas quantitativas. Posteriormente foi realizado um estudo longitudinal quasi experimental, dum programa de HT, onde participaram 124 adultos e idosos, de ambos os géneros, com DC. A dor, função, qualidade de vida e a motivação para a HT foram auto-reportados, através de questionários, no início e no fim do programa e realizadas entrevistas individuais para avaliar o nível de dor.

Na RSL encontrou-se evidência de que a HT e o exercício têm efeitos estatisticamente significativos sobre o alívio da DC e que o exercício e a motivação intrínseca para o exercício são efectivos no alívio da dor, melhoria da função e qualidade de vida. No estudo longitudinal quasi-experimental, verificou-se que uma assiduidade moderada (68%) à HT, registando-se melhorias na dor, função e qualidade de vida. A melhoria na função e qualidade de vida foi maior nas pessoas mais assíduas e melhor motivadas, enquanto que as pessoas que apresentaram uma diminuição da dor, aumentaram a amotivação para HT.

A HT parece ser eficaz na redução da dor, melhorando a função e a qualidade de vida. A teoria da auto-determinação é essencial para compreender a motivação que leva à manutenção e aumento do exercício nos adultos e idosos com DC. Sendo que a motivação autónoma está positivamente associada à assiduidade e à melhoria da função e qualidade de vida e a amotivação à diminuição da dor.

Palavras-chave: *Dor Crónica, Hidroterapia, Motivação, Teoria da Auto-determinação.*

Abstract

Chronic Pain is a leading cause of disability. Hydrotherapy (HT) and exercise are effective in chronic pain decrease; however we continue to see a poor adherence and maintenance to them.

The objective of this study was to analyze the associate between HT and the motivation and/or adherence for HT in adults and older people, based on the theory of self-determination, performing a systematic review (SR) and evaluates the motivational dynamics, over 13 weeks of a HT implementation program.

We performed a SR, about HT evidence in chronic pain, based on "randomized controlled trials" (RCT's) and articles about motivation and / or adherence to HT, which used various quantitative methodological approaches. Then we performed a longitudinal quasi experimental study, applying a HT program, attended by 124 adults with chronic pain, both genders. Pain, function, quality of life and motivation to HT were collected by questionnaires at baseline and at the end, as an individual interview to assess the level of pain.

In the systematic review were found evidence that HT and exercise have significant effects on the relief chronic pain and exercise and intrinsic motivation to exercise are effective in pain reliever, improving function and quality of life. In the quasi-longitudinal experimental performed, it was found a moderate adherence (68%) to HT, whith improvements in pain, function and quality of life. The improvement in function and quality of life was higher for the most assiduous and better motivation, however, people who had a reduction of pain, increased amotivation for HT.

HT seems to be effective in reducing pain, improving function and quality of life. The self-determination theory is essential to understand the motivation that supports the maintenance and improvement of exercise in adults and older people with chronic pain. Whereas the autonomous motivation is positively associated with attendance and improved function and quality of life and amotivation with pain decreased.

Keywords: *Chronic Pain, Hydrotherapy, Motivation, Theory of Self-determination.*

Abreviaturas, Siglas e Símbolos:

AE – Aquatic Exercise

AP - Aquatic Physiotherapy

AS - Ankylosing Spondylitis

AT - Aquatic Therapy

EBP - personalized physical Exercise Based Program, manual therapy and health education

GP - standard General Practice

CLBP - Chronic Low Back Pain

CG - Control Group

DC - Dor Crónica

DWR - Deep Water Running

FM - Fibromyalgia

HT - Hidroterapia, Hydrotherapy

LBE - Land-Based Exercise

MI - Motivational Interviewing

nCG - non-exercise Control Group

OA – Osteoarthritis

PT – Physical Therapy

RA - Rheumatoid Arthritis

RAI - Relative Autonomy Index

RCT`s - Randomized Controlled Trials

RSL – Revisão Sistemática da Literatura

SR - Systematic review

SDT - Self-Determination Theory

Índice

INTRODUÇÃO

A dor crónica (DC) é uma das queixas mais comuns entre adultos e idosos e uma das principais causas de incapacidade (Chung & Wong, 2007; Kean, Rainsford & Kean, 2008; Tsai, Liu & Chung, 2010). Afetando cerca de 19% dos europeus e 37 % da população portuguesa, representa graves repercussões a nível pessoal, familiar, económico e social, muitas vezes associadas a estados depressivos, reformas precoces, decréscimo da assiduidade ao trabalho, da função e qualidade de vida, sendo reconhecida como um importante problema de saúde pública (Almeida, Heitor, Bento, Gusmão & Xavier, 2005; Azevedo, Costa- Pereira, Mendonça, Dias & Castro- Lopes, 2012; Breivik, Collett, Ventafridda, Cohen & Gallacher, 2006).

Várias são as intervenções e abordagens efectivas no tratamento e controlo da DC, nomeadamente na área da fisioterapia, sendo uma delas a Hidroterapia (HT). Na realidade um programa estruturado de HT e exercício, têm efectividade na diminuição da DC, melhoria da função e qualidade de vida, por conseguinte com benefícios a nível não só fisico, como psicológico, social e de promoção da saúde (Hall, Swinkels, Briddon & McCabe, 2008; Kamioka et al., 2011). No entanto a evidência continua a mostrar-nos uma fraca adesão e manutenção ao exercício, com uma elevada taxa de abandono, em que a maioria dos participantes deixa os seus programas passados poucos meses após o seu início, o que implica que os benefícios para a saúde não sejam suficientes (Berger, Pargman & Weinberg, 2002; Buckworth & Dishman, 2002; Sisson & Katzmarzik, 2008; Baptista et al., 2012). De fato, vários estudos sugerem que muitas pessoas não têm motivação suficiente para praticar exercício ou mesmo actividade física (Garber et al., 2011).

Esta evidência demonstra também a prática de quase 25 anos de intervenção em hidroterapia com utentes com DC. De facto a autora, ao longo deste tempo, embora tenha verificado a melhoria da função e da qualidade de vida em alguns dos seus utentes que se mantêm no programa de HT, deparou-se com utentes que iniciavam o programa, mas que desistiam ao fim de pouco tempo ou começavam a diminuir a sua assiduidade. Surgiram-lhe então várias questões: será que um programa estruturado de HT, diminui a DC? O que motiva os utentes a praticar HT? e porque uns se mantêm assíduos e outros não? Será que se movem

por diferentes tipos de motivação? Porque é que a assiduidade vai diminuindo ao longo do tempo, na maioria dos utentes? Será que a motivação se vai alterando? Haverá uma relação entre a motivação para a HT e as possíveis alterações na dor, função e qualidade de vida?

Estas são algumas das questões, às quais o estudo pretende responder. Para isso, usámos como referencial teórico a Teoria da Autodeterminação (TAD), que sendo uma macro teoria sobre a motivação humana, estuda o desenvolvimento da personalidade e o funcionamento em contextos sociais, bem como as causas e consequências do comportamento autodeterminado (Deci & Ryan, 2008a). Esta teoria tem vindo a ser aplicada nas últimas três décadas em vários contextos, incluindo a educação, religião, política, trabalho, família e também no contexto da atividade física, no entanto existem poucos estudos no contexto da DC, daí também a pertinência e relevância deste estudo (Deci & Ryan, 2008; Ryan & Deci, 2002; Ryan & Deci, 2007; Ryan, Williams, Patrick & Deci, 2009). A compreensão desta dinâmica motivacional é de extrema importância, porque pode nos ajudar a influenciar as mudanças de comportamento para a HT e assim obter os efeitos benéficos desejados para a comunidade (redução da dor, melhorando a qualidade de vida e funcionalidade), através de regulações mais autónomas. É provável que o foco inicial para a hidroterapia esteja associado a uma diminuição da dor a curto prazo, enquanto as mudanças nos fatores motivacionais relacionados com o exercício, com uma ênfase especial em fontes intrínsecas de motivação (por exemplo, interesse e prazer em exercício), deva desempenhar um papel mais importante no controle da dor a longo prazo. Estas hipóteses são aliás, semelhantes aos resultados relatados em outros estudos relacionados com o controle de peso (Teixeira et al., 2006).

Para a autora, como profissional da saúde, tornou-se importante responder a estas questões e considerou interessante desenvolver este aspecto motivacional, a partir do momento em que tomou conhecimento, no decorrer das aulas de "Psicologia do exercício" no 1º ano deste mestrado, das várias teorias que tentam explicar o comportamento para o exercício, tendo sido a TAD o "motor de arranque" para a execução desta dissertação, que espera ser uma mais-valia para os indivíduos que sofrem com DC e para todos os profissionais de saúde que os acompanham.

Delinear e conceber um estudo na área da motivação apresentou-se então como um triplo desafio à autora, por um lado estudar uma área que não faz parte do seu "background", por outro escrevê-lo na íntegra em inglês e por fim a possibilidade de editar um ou os dois

artigos. Esta é a razão pela qual se justifica a apresentação desta dissertação com secções em português e outras em inglês (dois trabalhos em formato artigo). Também o facto de ter de explorar duas áreas distintas: a da motivação e a da HT, fez com que o trabalho se apresentasse em duplicado, uma vez que teve de se proceder a duas revisões sistemáticas da literatura e à entrega de vários questionários, cruzamento e tratamento de dados nestas duas áreas distintas. A realização inicial destas revisões sistemáticas serviu como treino à pesquisa de artigos, ao cruzamento de dados e ao treino da "escrita em formato de artigo", o que foi importante e essencial em todo o processo de crescimento, evolução e amadurecimento que culminou com a concretização do 2º artigo sete meses depois.

Este trabalho teve como objectivo analisar a associação entre motivação para HT e a DC, função e qualidade de vida, em adultos e idosos participantes nas sessões de hidroterapia em piscinas da comunidade, durante 13 semanas, segundo a perspectiva da teoria da autodeterminação. A hipótese é: uma regulamentação mais autónoma para HT está associada a níveis mais baixos de DC e uma melhoria na função e qualidade de vida.

Este trabalho contém dois artigos científicos: uma revisão sistemática da literatura, sobre a efectividade da HT na DC e sobre a motivação para o exercício / HT, que enquadra e suporta teoricamente um segundo estudo, do tipo *longitudinal quasi experimental*, intitulado "Analysis of the motivation for hydrotherapy in users with chronic pain ". Inicialmente, e antes da apresentação dos artigos, é descrito um resumo e uma introdução geral e o trabalho finaliza com a conclusão e a bibliografia, contendo por ultimo em apêndice os documentos, elaborados pela autora, durante o estudo longitudinal e em anexo os questionários e escalas utilizados.

Capitulo 1 - Motivation and adherence for Hydrotherapy in users with chronic pain - A systematic review of literature

Abstract

Background: Chronic Pain is a leading cause of disability. Hydrotherapy (HT) is one of the therapeutic interventions most sought for chronic pain relief. Although the existing evidence suggests this effectiveness of HT and the beneficial effects of exercise we continue to see a poor adherence and maintenance to exercise.

Objective: The aim of this systematic review (SR) was to analyze the literature on: a) the effects of HT interventions for community-dwelling adults and older people with chronic pain, first phase; and b) the motivation and/or adherence for HT or aquatic exercise (AE), second phase.

Methods: MEDLINE, CINAHL, Pub-Med, PEDro and PsycINFO were searched between June 2006 and February 2013. Additional studies were identified by contacting clinical experts and by manual search. Search terms included only randomized controlled trial (RCTs), that included at least one treatment group that received HT or AE, in adults or older people, with chronic pain as an outcome measure. In a stage 2 process, using the same data sources, over the period of 2003 to February 2013, we investigate papers studying the motivation and/or adherence for HT or AE using diverse quantitative methodological approaches.

Results: Nine studies met the inclusion criteria of the first phase. The average methodological quality for all 9 RCTs studies was 6.0 using the Physiotherapy Evidence Database Scale (PEDro). We found evidence that HT or AE had statistically significant effects on chronic pain relief when compared with no treatment. In the stage 2 we found 5 studies, including 1 RCTs and 4 cohort studies. All studies were 2b using the "Levels of Evidence" of the Centre for Evidence Based Medicine (CEBM) (2009). We found evidence that exercise, high intrinsic motivation to exercise and motivational interviewing (MI) are effective in pain relive, improving physical mobility, psychological well-being and self-efficacy, promoting more autonomous motivation.

Conclusions: Evidence demonstrated that aquatic and land exercise had similar positives effects on pain relive. Compared with no treatment or non-land exercise, AE has a positive pain-relieving effect in the short term. However, the long-term benefit is unknown. Also intrinsic motivation to exercise have a significant effect on pain relive and motivation interview should be one of the recommended pain intervention programs to increase and support autonomous regulation in order to enhance physical activity. Further studies are needed using robust methodological designs.

Keywords: *adults, middle-aged people, older people, elderly, hydrotherapy, aquatic therapy, aquatic exercise, chronic pain, pain, motivation, adherence to aquatic exercise*

Chronic pain is defined as persistent or recurrent pain, lasting more than three months, which may persist beyond the healing of the injury that gave rise to it (Turk & Okifuji, 2001). As a chronic disease presents a socio economic problem in our society, often presenting a decrease in function, quality of life and depression (Almeida, Heitor, Benedict, Gusmão & Xavier, 2005; Castro-Lopes, Saramago, Romão & Paiva, 2010).

Aquatic Exercise in warm water usually has been known as HT, or Aquatic Therapy (AT), or aquatic physiotherapy (AP), and represents a popular treatment for many patients with painful musculoskeletal conditions. Pain-relieving effects have been attributed to a wide variety of mechanisms (Hall, Swinkels, Briddon & McCabe, 2008). The warmth and buoyancy of water may block nociception by acting on thermal receptors and mechanoreceptors, thus influencing spinal segmental mechanisms (Bender et al., 2005). In addition, the warmth may enhance blood flow, which is thought to help in dissipating algogenic chemicals, and it may facilitate muscle relaxation. The hydrostatic effect may also relieve pain by reducing peripheral edema and by dampening sympathetic nervous system activity (Gabrielsen, Videbaek & Johansen, 2000; Kamioka et al, 2011). Some reports have demonstrated the effectiveness of water exercise, comprehensive health education, including lifestyle education for middle-aged and elderly people (Kamioka, Nakamura & Yazaki, 2006; Kamioka, Ohshiro & Mutoh, 2008).

Although the existing evidence demonstrates some effectiveness of HT in the chronic pain relief and the beneficial effects of exercise on physical health, psychological, social well-being and in health promotion we continue to see a poor adherence and maintenance to exercise (Alves, 2005; Berger, Pargman & Weinberg, 2002; Biddle & Mutrie, 2001; Dosil, 2008; Hall et al., 2008; Lee, Rexrode, Cook, Manson, & Buring, 2001; Lund et al., 2008). Sixty percent of adults in Europe engaged in no physical activity or sports on a typical week (Special Eurobarometer, 2010). According to the UK Office of National Statistics, between October 2011 and October 2012 only a third (32,4%) of adults aged 26 and over, in England, participated in at least 30 minutes of sport at moderate intensity at least once a week and men were more likely than women to participate once a week (41.1% and 31.1% respectively) (Rendall, C., 2013). According to Dishman (2001) only 25% of the adult population is regularly active, and in Portugal only 23% of the population practice exercise and sport (19% do it on a regular basis and 4% occasionally) with a rate abandonment of the practice of physical activity and sport which stands at 59% (Marivoet, 2001). The percentage of the population attaining the physical activity guidelines in Portugal stands at 8%, far below the European average (17%) (study conducted by the European Union over its citizens and sport, Eurobarometer_213, 2004). A new study by the European Union on sport and physical activity (Eurobarometer_334, 2010), between 2004 and 2010, demonstrated that there were no major changes, and there was only a slight improvement in the average weekly physical activity. Baptista et al. (2012), in a recent study, described the prevalence of physical activity in a representative sample of the Portuguese population (n= 4696) aged 10 yr and older, using accelerometry. They found that young and old people, particularly girls and women, showed the lowest values in practice and should thus be target groups for prevention strategies aimed at increasing physical activity. Apart from the poor adherence to exercise, it appears, from the literature that most practitioners leaving their programs after a few months, undergoing a 45% sharp decline in the first six months, stabilizing then, although with a slight decrease up to 18 months (50%), implying that the benefits to health are not sufficient to continue to practice exercise (Berger et al., 2002; Buckworth & Dishman, 2002).

Knowing that motivation is a critical factor in supporting sustained exercise, a lack of motivation can be explained by people not being sufficiently interested in exercise, or not valuing its outcomes enough to make it a priority in their lives or may not feel sufficiently competent at physical activities, feeling either not physically fit enough or skilled enough to

exercise, or they may have health limitations that present a barrier to activity (Korkiakangas, Alahuhta & Laitinen, 2009; Ryan, Williams, Patrick & Deci, 2009). So, many people are amotivated and have no intention to be more physically active or are insufficiently motivated in the face of other interests or demands. Therefore, the motivation to exercise is different between individuals and can change over time. So, it is important to analyze the motivation or adherence for exercise, more specifically HT, quantifying the different motivational regulations (internal and external) as well as amotivation to practice the same.

For this purpose we performed two systematic literature reviews of studies that analyzed in patients with chronic pain: (1) the effect of HT or AE – stage 1, and (2) motivation for HT or AE – stage 2.

METHODS

We developed the protocol for the review following PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) (Liberati et al., 2009).

Eligibility criteria

Inclusion Criteria

Types of Studies

For the stage 1, criteria for inclusion were (1) RCTs in English, (2) must have been reported at least one group performed HT or AE and (3) examined the effectiveness of HT or AE in patients with any musculoskeletal pathology and with chronic pain as an outcome measure. For the stage 2 (motivation/adherence for HT) the review includes studies that (1) investigating clinical population samples, and (2) using diverse quantitative methodological approaches (3) written in English and must (4) have reported at least one group performed HT, AE, physical activity or exercise in patients (5) with chronic pain. We widened the search using the keywords: Physical Activity or Exercise. Motivation or Adherence for AE or HT was used as a primary outcome measure.

Types of participants

Participants had to be adults or older people with chronic pain suffering from musculoskeletal diseases. Target diseases were knee and/or hip osteoarthritis (OA), chronic low back pain (CLBP), fibromyalgia (FM), rheumatoid arthritis (RA), ankylosing spondylitis (AS) or other chronic musculoskeletal diseases with chronic pain.

Types of Outcome measures

The studies must have reported HT or AT in chronic pain (as an primary outcome measure) using any validation`s assessment instruments. For stage 2, trials must have reported types of motivation or adherence to HT, AE, physical activity or exercise, and in which at least one outcome measure of subjective pain experience captured by ratings of pain intensity, sensation, and unpleasantness using any validation`s assessment tools and or another disability or functional outcome measure

Exclusion Criteria

Studies already revised from others SRs, qualitative studies and studies that considered the prevention of pain in healthy conditions (eg, pregnancy) were excluded from the review. Participants who exercised as part of rehabilitation immediately after surgery or suffering acute conditions were excluded. Participants less than 18 years of age were excluded due to the additional management implications associated with an immature musculoskeletal system and researches on autonomy and exercise in adolescents and children (typically based in school and physical education) was excluded, as well as studies with competitive athletic samples.

Search Strategy

The databases Cochrane Library, MEDLINE, CINAHL, Pub-Med, PEDro and PsycINFO were searched over the period June 2006 to February 2013 (stage 1) and over the period 2003 to February 2013 (stage 2). We selected articles published in and after June 2006 because by that time we discovered SRs on this topic. Additionally we have manually

searched reference lists from eligible studies and by contacting clinical experts. On a stage 1 we used a range of search terms based around the concepts of aquatic exercise (hydrotherapy, “aquatic therapy” “aquatic physical therapy”, “water exercise”, water gymnastic”, “water aerobics”, “pool exercise” or “pool therapy”, “aerobic aquatics”, “aquatics exercise therapy”, “ water-based exercise”, “water based training”, “water training”, “water-gymnastics”) and chronic pain using the PICO strategy (Liberati et al., 2009) with the following words: (adults or “middle-aged people" or "older people" or elderly) AND (hydrotherapy or “aquatic therapy” or "aquatic exercise") and ("chronic pain" or pain). On a second stage, we investigated papers studying the motivation and/or adherence for HT, over the period of 2003 to February 2013, because by that time we discovered SRs on this topic and the following strategy was used terms and text words, including: (adults or “middle-aged people" or "older people" or elderly) AND (motivation OR “aquatic exercise adherence " OR “physical activity” OR Exercise) AND ("chronic pain" or pain). We extend our search strategy for HT, used a range of search terms not only around the concepts of HT or AE but also of physical activity or exercise. The full electronic search strategy is available from the author on request.

Quality Assessment

All trials (included on1st stage) were critically appraised using the PEDro Scale (de Morton, 2009; Maher, Sherrington, Herbert, Moseley & Elkins, 2003) and were independently assessed by author. A search for included papers was then performed on PEDro Database and quality assessment scores compared. If no quality score was available in the PEDro database, the paper was independently assessed by the reviewer. For stage 2 we used the “Levels of Evidence” (CEBM, 2009).

RESULTS

Study Selection

Five hundred twenty-eight (528) publications were identified and screened against the inclusion and exclusion criteria. Of these publications, 495 were rejected from the analysis of the title and abstract. Thirty-three studies proceeded to the paper screening stage, and nine of these were accepted for review. The reasons for exclusions at each stage are explained in

the figure 1. The stage 2 of this search resulted in 1181 articles (fig. 2). After the titles and abstracts analysis, 64 were selected. The "full text" analysis leads to 47 articles to be excluded and 5 articles to be included in this review. Of these, one is a RCT, and four cohort studies. At this stage, studies were excluded if did not include either motivation or adherence variables or HT, AE, physical activity or exercise variables (accounting for most of the excluded studies), or used non-adult or older people samples. Others reasons for exclusions at each stage are on the flow diagram (fig. 2).

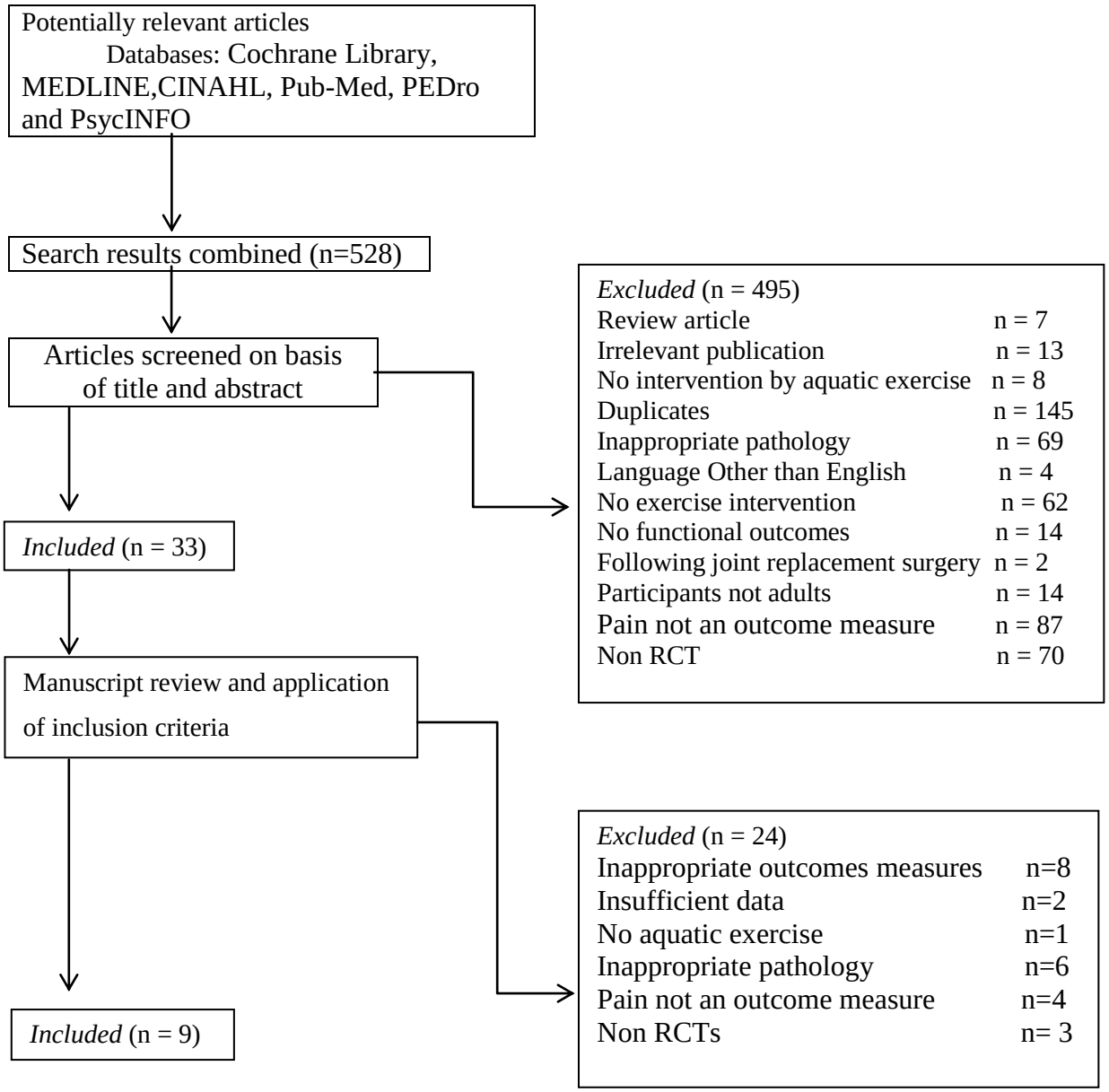

Figure 1. Flow diagram 1-stage of study selection

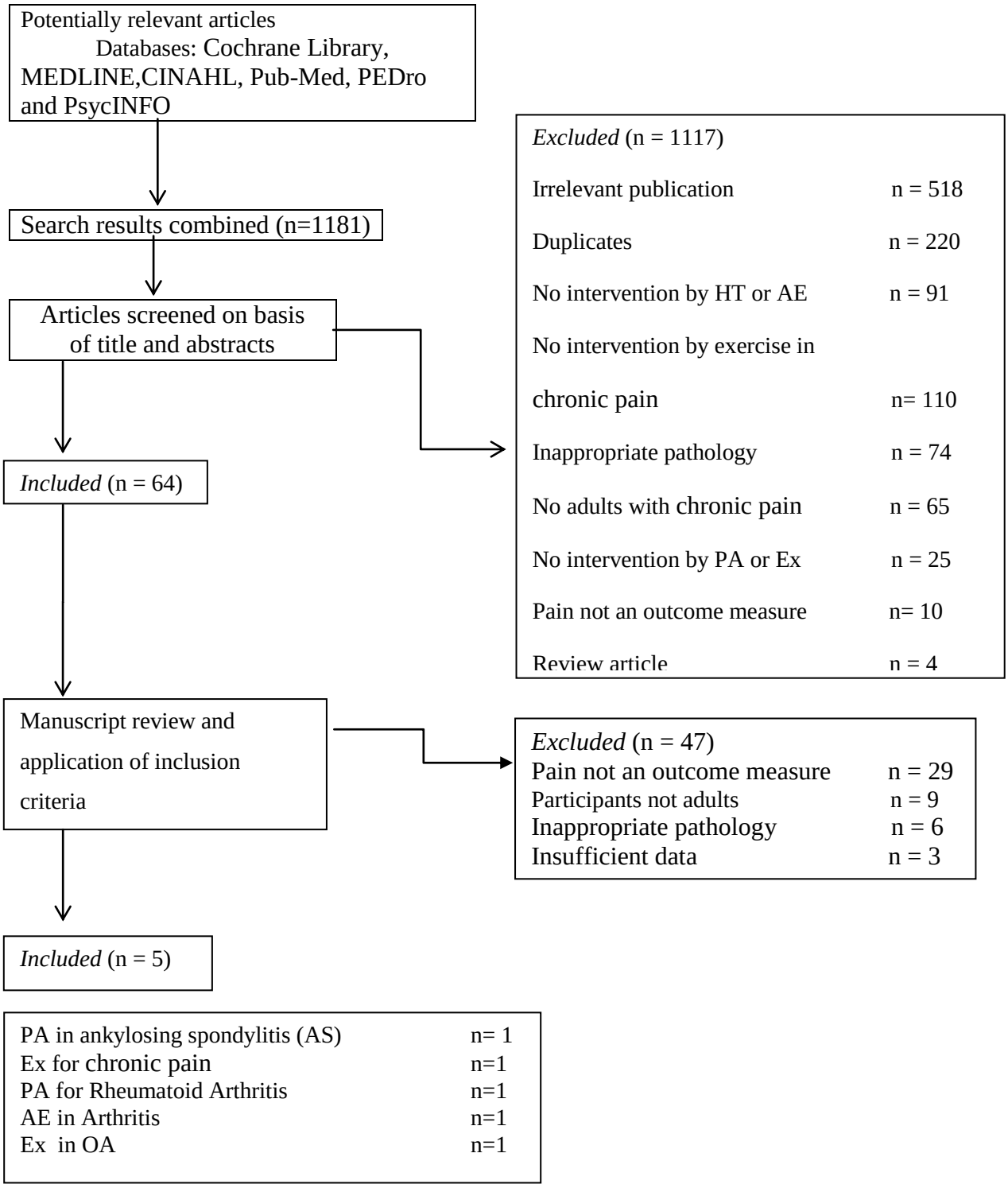

Figure 2. Flow diagram of 2- stage of study selection

Study characteristics

Participant numbers, study design features, data describing the intervention design and the summary of features and components of aquatic, land exercise or control groups interventions are described in Tables 1 and 2.

Table 1 – Hydrotherapy studies characteristics

ARTICLE	Title	Study design	PEDro Scale Score	PURPOSE:	PARTICIPANTS	INTERVENTION (duration, program,setting)	OUTCOMES MEASURES	PATIENT ASSESSMENT/FOLLOW-UP	RESULTS	CONCLUSIONS
Cuesta-Vargas et al., 2012	Deep water running (DWR) and general practice (GP) in primary care for non-specific chronic low back pain (CLBP) versus GP alone: randomized controlled trial	RCT	7	Compare the addition of DWR to standard GP on CLBP versus GP care alone on pain, physical and mental health and disability	54 subjects with CLBP. Two groups: experimental group (59% female, n=29, age:38.6±12.2) and CG (56% female, n=29, age: 37.8±13.2)	15 weeks, 3X/week, 30 min of highly intensive aerobic exercise (DWR), with flotation belts, water depth: 2.15 m. The HR was monitored and a physiotherapist supervised both: the technique, the intensity of exercise and exercise workloads. EG received additional 30-min sessions of DWR at the individualized aerobic threshold. Both group received a 25-page educational booklet and verbal presentation on basic anatomy and physiology of the spine, principles of ergonomics for low back pain patients, and instructions on how to exercise and to cope with the chronic phase of CLBP. At 4-month follow-up, this information was reinforced.	Pain: 100-mm visual analogue scale (VAS). Disability: Roland Morris Disability Questionnaire (24 RMDQ). General health: (physical and mental) (SF-12) adapted from the SF-36.	Data collection was at baseline, 4 months (post intervention), 6 and 12 months (in clinic) follow-up.	Both groups showed improvement. For patients with nsLBP, 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.	DWR+ GP (EG)= more effective in > physical and mental function, < pain and disability than usual GP care alone. The results were maintained at 1 year follow-up
Han et al., 2011	The effects on Muscle Strength on Visual Analog Scale Pain of Aquatic Therapy for individuals with CLBP	RCT	4	Investigate whether ten weeks of aquatic therapy would increase low back muscle strength and reduce CLBP	19 elderly women with CLBP. After receiving a 4 weeks conservative treatment, divided in two groups: Aquatic exercise group (n=9, Age 61,2+-3,3) and Non exercise group(n= 10, Age: 60,8+-5,0)	10 weeks, 5X/week, 50 min/session: Aquatic exercise group: 1- warm-up 10 min., 2- main exercise 30 min, 3 - cool-down 10 min (Robert's program) at city`s swimming pool. Control Group-non exercise.	To measure de degree of low back pain (VAS). Peak torque of flexors and extensors (cybex-770)	Baseline and 10 weeks	The aquatic exercise significantly reduced VAS pain by 52,1% and improvements in low back muscle strength were found in the aquatic therapy group	The ten weeks of aquatic therapy exercise can enhance low back muscle strength and reduce CLBP in elderly women

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Bello et al., 2010	Hydrotherapy versus land-based exercises in the management of chronic low back pain; a comparative study	RCT	4	Compared the efficacy of hydrotherapy (HT) and land-based exercises (LBE) in the management of CLBP	12 patients (ages 32-70) with CLBP .Majority were females and 9 (75%) of them engaged in sedentary life styles. Into HT group(n=6) or land-based exercise groups(n=6).	6 weeks program, 2X/week, 45–60 min/session at 32-34º C water. Warm-up phase: 4 min, whilst the land group engaged in 3 min, main exercise phase and cool-down phase like Silva et al. (2008) exercise protocols. Exercises in both groups were synchronized as much as possible so as to involve the same muscle groups. Land and aquatic exercise were directed by the researchers and experienced physiotherapists.	Pain :Visual Analog Scale (VAS), Trunk flexibility: Modified Schober Flexion Technique (MSFT) and Modified Schober Extension Technique(MSET).	Baseline and after six weeks	There were significant differences ($p < 0:05$) between the pre-treatment and post-treatment VAS, MSFT and MSET for the hydrotherapy groups. Whilst the VAS and MSET scores were significantly different ($p < 0:05$) from baseline scores in land group, the MSET failed to show any significant difference. Comparison of both groups showed hydrotherapy group scoring significantly higher ($p < 0:05$) only on MSFT than land group.	The two exercise media were relevant in the management of CLBP, though hydrotherapy seems to be better for spinal flexibility, thus serving as a better alternative in clinical practice.
Lim et al., 2010	Effectiveness of Aquatic Exercise for Obese Patients with Knee Osteoarthritis: A Randomized Controlled Trial	RCT	7	1-Design an AQE and LBE program in patients with obesity and knee osteoarthritis (OA) and 2- to investigate the effectiveness of AQE and LBE	75 patients with obesity and knee OA (Age- 50 years). Participants were randomly allocated into 3 groups: AQE (n =26), LBE (n = 25), and the control group (n = 24).	8 weeks of AE, 3X/week, 40-min. /session and the same for LBE group. In a 34°C water, depth: 115 cm. AQE: Exercise intensity was maintained at the level of more than 65% of maximal heart rate. Water training: warm-up (5 min.); session (20 min) and cool down (5 min). A physician monitored pain and other symptoms during the training. Exercise therapy was applied to LBE group by a physiotherapist (40 min), 5 minutes of warm-up and 5 minutes of cool-down. The intensity of LBE began from 40% of the 1-repetition maximum for the beginner, but in advanced classes, 60% of 1-repetition maximum was applied, which is the usual intensity for geriatric patients. The CG was provided only the classes for home-based exercise, including the Q-sets exercise for strengthening of quadriceps muscles and a partial squatting along with behavioral correction of their daily activities and lifestyles	Body fat analysis and BMI (impedance analysis), Pain intensity: brief pain inventory (BPI). Disabilities related to lower limb function: WOMAC, Quality of Life: SF-36, version 2.0 and isokinetic device - flexor and extensor muscle strengths.	Baseline and eight weeks before (at the end)	Although no significant difference was found in general characteristics among the 3 groups before exercise, body fat proportion in the AQE group decreased significantly after intervention. The BMI was slightly reduced after intervention, but it was not statistically significant. The AQE group showed significant improvements in pain, disability, and quality of life. Notably, the change in pain interference in the AQE group was greater than that of the LBE group. Both exercise groups showed significant improvements in WOMAC	AQE had an advantage in controlling the interference with activity because of pain. AQE may be an effective tool for patients with obesity who have difficulties with active exercise due to knee osteoarthritis.

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Wang et al., 2010	Comparing the efficacy of aquatic exercises and land-based exercises for patients with knee osteoarthritis	RCT	7	Compare changes among 3 study groups and to investigate whether aquatic exercises would be superior compared with land exercise on pain reduction.	84 participants with knee OA, age mean: 67.7 ± 5.9. Control group (28), aquatic group (28) or land-based exercise group (28).	20 weeks, 3X/week, 60 min. /session. Public swimming pools: 30º C. Session: flexibility and aerobic training class (standardized aquatic exercise protocol was developed based on the Arthritis Foundation Aquatics Program (AFAP). Program was described in the Wang et al. (2007) study. A standardized land-based exercise protocol was developed based on the People with Arthritis Can Exercise (PACE): 60-minute flexibility and aerobic training class. A trained exercise instructor taught the group classes at the and land	Quality of life: Knee Injury Osteoarthritis Outcome Score (KOOS). Knee ROMs: standard plastic goniometer, Distance that participants can walk within six minutes: six-minute walk test.	Baseline, weeks 6 and 12	Results showed statistically significant group-by-time interactions in pain, symptoms, sport/recreation and knee-related quality of life dimensions of Knee Injury and Osteoarthritis Outcome Score, knee range of motions and the six-minute walk test. However, the aquatic group did not show any significant difference from the land group at both weeks 12 and 6.	AE and LBE programs < pain, > knee range of motions, >quality of life. Similar outcomes could be possible with the two programs
Cadmus et al., 2010	Community-based aquatic exercise and quality of life in persons with osteoarthritis (OA)	RCT	4	To evaluate the effectiveness of a community-based aquatic exercise program for improved quality of life among persons with OA.	249 adults (55–75 year of age) with OA. Intervention group participants (n = 125). Control group participants (n = 124) were asked to maintain their usual activity levels	20 weeks, 2X/week. 45-60 min/session. Water temperatures: 29º C. to 32º C. Range of motion, muscle strengthening, and endurance exercises form the base of each class. AFAP: a standardized, preexisting, community-based program, versus control (participants were asked to maintain their usual activity levels). Instructors are certified by the Arthritis Foundation to conduct classes.	Quality of Life scale (PQOL), Self-efficacy for pain and symptom (8-item version of the ASS), Physical impairment: arthritis pain (VAS), the number of swollen, tender joints. Activity limitation: 19-item (DISINDX) of HAQ. Depression: The 11-item Center for Epidemiolo-gical Studies Depression scale (CES-D).	Demographics were collected at baseline, and patient-reported outcomes were collected at baseline and after 10 and 20 wk	Aquatic exercise had a positive impact on PQOL scores ($P < 0.01$). This effect was moderated by BMI ($P < 0.05$) such that benefits were observed among obese participants (BMI >or= 30), but not among normal weight or overweight participants. None of the tested variables were found to mediate the relationship between aquatic exercise and PQOL scores.	AE offers a therapeutic and pragmatic option to promote quality of life among individuals who are living with both obesity and osteoarthritis. Future investigation is needed to replicate these findings and develop strategies to increase long-term participation in aquatics programs.

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Cuesta-Vargas et al., 2009	Clinical effect of deep water running (DWR) on non-specific low back pain (CLBP): A randomi-zed trial	RCT	6	Evaluate clinical effect of deep water running (DWR) on CLBP	46 persons with CLBP in two groups: one group receiving evidence-based physiotherapy (EBP:n=25) and a second group with EBP plus Deep Water Running (EBP + DWR, n=24).	15 weeks with two experimental processes (EBP and EBP+DWR), 3X/ week. EBP (personalized physical exercise program, manual therapy and health education) was the common process to which was added 20 minutes of personalized intensity DWR at the aerobic threshold. Sessions were directed by physical therapists.	Disability:(RMDQ) , Pain (VAS), General health state: (SF-12). Physical fitness: 3 tests measured impairments: 1-(FIML test)by extensionmetric dynamometer, 2-(LSMflex), by dual inclinometer (DUALER Jtech), 3-muscular endurance of lumbar and hip extensors by means of the Sorensen test (Burns et al2000).	Beginning and end of the study	The pain of CLBP were homogeneous at baseline. Significant changes between group were don't found for pain in favour of the EBP+DWR group ($p<0.3$). The within-group differences were highly significant for all clinical and functional variables. The effect was clinically relevant for pain in the EBP+DWR group (0.70) and in the EBP group (0.58), and for disability degree it was also relevant in the EBP+DWR group (0.48) and relevant for the EBP group (0.36).The neuro-endocrine modulation of CLBP may be favored by aerobic exercise at the AT.	EBP+DWR don't produces a significant improvement in pain, general health state and disability over EBP alone. EBP that combines the 3 strategies of PT produces a very relevant effect for pain, disability and general physical health. Better results are achieved with an individualized plan of strategies
Munguia-Isquierdo et al., 2008	Assessment of the Effects of Aquatic Therapy on Global Symptomatol ogy in Patients With Fibromyalgia Syndrome: A RCT study	RCT	7	Evaluate the effects of a 16-week ET in a chest-high pool of warm water on the global symptom-tology of women with fibromyalgia (FM) and to determine exercise adherence	Middle-aged women with FM (n=60) and healthy women (n=25). Exercise group (n=29) and control group (n= 24).	A 16-week aquatic training program, 3 X/week, in a chest-high warm pool (32°C). Session (50-60 min.): warming up (10 min.), strength exercises (10 to 20 min.), aerobic exercises developed progressively at intensity sufficient to achieve 50% to 80% of the age predicted maximum heart rate equation(20 to 30 minutes) and cooling down (10 min.). Heart rate was monitored. The control group was instructed not to change their habits regarding physical activities during the period.	Pain: Tender point count (syringe calibrated), Health status(FIQ); Sleep quality (P.S.Q.I); Physical function(endurance strength to low loads tests), Psychological function (S.A.I.), Cognitive function(PASAT) and adherence 12 months after the completion study	Baseline and immediately after the training period at 16 weeks. Adherence after 12 months completing program	Exercise therapy was effective in < the tender point count and > sleep quality, cognitive function, and physical function. Anxiety remained unchanged during the follow-up. The EG had a significant > of health status. There were no changes in the CG. 23 patients in the EG were exercising regularly 12 months after completing the program.	Improves of most symptoms of FM and high adherence in unfit women with FM symptomatology. The therapeutic intervention's effects can be assessed through applicable tests in the clinical practice.

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Fransen et al., 2007	Physical Activity for Osteoarthritis Management: Randomized Controlled Clinical Trial Evaluating Hydrotherapy or Tai Chi Classes	RCT	8	To determine whether Tai Chi or hydrotherapy classes for individuals with chronic symptomatic hip or knee osteoarthritis (OA) result in measurable clinical benefits	152 older persons (59–85 years) with chronic symptomatic hip or knee AO. In hydrotherapy classes (n = 55) or Tai Chi classes (n = 56), or a waiting list control group (n = 41).	12 weeks, 2X/week, classes for 1 hour. Water temperature 34°C. The hydrotherapy program was designed by the senior rheumatology physiotherapist. Four different registered physiotherapists conducted hydrotherapy classes over the study period. Four different Tai Chi instructors trained in a specially designed Tai Chi program.	Baseline participant characteristics included a validated evaluation of comorbidity. 1ºs-Pain and physical function (Western Ontario and McMaster Universities Osteoarthritis Index), 2ºs-general health status (Medical Outcomes Study Short Form 12 Health Survey [SF-12], version 2), Psychological well-being, and Physical performance (Up and Go test, 50-foot walk time, timed stair climb).	Baseline (pretreatment), 12 weeks (post treatment), and 24 weeks (follow up)	Both class allocations achieved significant improvements in the SF-12 physical component summary score, but only allocation to hydrotherapy achieved significant improvements in the physical performance measures. All significant improvements were sustained at 24 weeks. Class attendance was higher for hydrotherapy, with 81% attending at least half of the available 24 classes, compared with 61% for Tai Chi.	Access to either hydrotherapy or Tai Chi classes can provide large and sustained improvements in physical function for many older, sedentary individuals with chronic hip or knee OA.

Table 2 – Motivation studies characteristics

AUTHORS	TITLE	STUDY DESIGN	CEBM 'Levels of Evidence	PURPOSE	PARTICIPANTS	INTERVENTION (duration, program, setting)	OUTCOMES MEASURES	PATIENT ASSESSMENT/ FOLLOW-UP	RESULTS	CONCLUSIONS
Brophy et al., 2012	The effect of physical activity (PA) and motivation on function in ankylosingspondylitis (AS):A cohort study	Cohort study	2b	Examines the effect of exercise and motivation to exercise on function, while controlling for disease severity	201 AS people: 79% male. Mean age: 55.Mean disease duration: 22years(SD+- 15) from the date of diagnosis and 30 years(SD+-15) from the date of first symptoms.	Participants were asked to complete questionnaires about multiple aspects of their disease every 3–6 months (captured AS-specific disease activity, function and quality of life). A separate exercise questionnaire was circulated one year into the study. 3 months after completion of the exercise questionnaire' patients were surveyed again in relation to disease activity and function.	Motivation to exercise (BREQ_2); Physical activity - International Physical Activity Questionnaire-Short Form (IPAQ-SF); Health status/quality of life(EQ5D); anxiety and depression - Hospital Anxiety and Depression Scale; Disease activity (BASDAI);Ability to function and cope with activities of daily living over the past week(BASFI)	Over a year: complete questionnaires(AS activity and function and quality of life) every 3–6months. A separate exercise questionnaire (PA and motivation to exercise) was circulated one year.3 months after completion of this patients were surveyed again in relation to disease activity and function	The response rate to the questionnaire was 88%. Improvement in function was greatest for people with higher physical activity levels and those who were more motivated to exercise, this was especially the case for patients with the most severe disease activity. The effect of motivation to exercise had a direct effect on function an indirect effect of improving activity levels there by improving both current and future function. People with high intrinsic motivation had the greatest benefit to activity and function.	Any intervention that both improves motivation and increases opportunities to exercise would have a 2-fold influence on function.
Tse et al., 2012	Motivational interviewing (MI) and exercise program for community-dwelling older persons with chronic pain: a randomised controlled study	Single-blinded randomised control study-RCT	2b	To examine the effectiveness of an integrated motivational interviewing and physical exercise (PE)	Older persons (+-76,5 years), with chronic pain (n = 56). Women (95,7%).Experimental group: n=31, CG: n= 25. Before the MIE, 90% of the participants exercised daily and 68,1% exercised over 30 minutes.	Experimental group received an 8-week integrated motivational interviewing and physical exercise programme (class as a pain self management skill taught by the physiotherapist in 45-minute sessions: relaxation, stretching of all large joints and strengthening of the muscles located around the common pain locations.) Control group received regular activities in the centre.	Pain- intensity (NRS), Pain locations (body chart) and self-efficacy (PSEQ); Physical and psychological function: level of anxiety (STAI), happiness(SHS), depression (GDS), mobility and balance: (EMS), quality of life (F-12). Attendance and compliance with exercise (experimental group).	Before and after the motivational interviewing and physical exercise program.	After the MI, the overall attendance rate of the in-class sessions was higher in the experimental group (EG), as the rate of compliance with home exercise practice. Significant improvements in pain intensity, pain self-efficacy, anxiety, happiness and mobility after the motivational interviewing and physical exercise program (all p < 0 05) for EG, while no significant improvement in control group (CG) except on the happiness scale. Regarding group differences in the outcome measures, the change scores on pain intensity, state anxiety and depression were significantly better in the EG.	Motivational interviewing and physical exercise program is effective in improving pain, physical mobility, psychological well-being and self-efficacy for community-dwelling older persons with chronic pain.

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Hurkmans et al., 2010	Motivation as a Determinant of Physical Activity in Patients With Rheumatoid Arthritis	Cohort study	2b	Examine the association between physical activity(PA) and the extent to which RA patients	271 RA patients. 178 (66%) were female, their mean SD age was 62+-14 years mean SD disease duration was 10+-8 years	Postal survey to assess current physical activity level (Short Questionnaire to Assess Health-Enhancing Physical Activity), regulation style (Treatment Self-Regulation Questionnaire), and the autonomy supportiveness of their rheumatologists (modified Health Care Climate Questionnaire).	1-PA level: SQUASH; 2-Regulation style: Treatment Self-Regulation Questionnaire (TSRQ);3-Autonomy supportiveness of their rheumatologist: Modifed Health Care Climate Questionnaire (HCCQ); 4-Disease activity: (RADAI); 5-functional ability (HAQ)	The study lasted from October 2006 to April 2007. Were sent a questionnaire with a response rate of 33% after 3 weeks. After telephone contact with the non responders, the response rate increased to 42% (n 271).	Younger age, female sex, higher education level, shorter disease duration, lower disease activity, and a more autonomous regulation were univariately associated with more physical activity. younger age and a more autonomous regulation were significantly associated with a higher physical activity level	Regulation style was a significant determinant of physical activity in RA patients. This finding may contribute to further development of interventions to enhance physical activity in RA patients.
Gyurcsik et al., 2003	Exercise-Related Goals and Self-Efficacy as Correlates of Aquatic Exercise in Individuals With Arthritis	Cohort study	2b	1-Examine whether AE–related goals, task self-efficacy, scheduling self-efficacy are predictive of AE attendance in individuals with OA.2-determine whether high attendees differed from low attendees on goals and self-efficacy	216 adults with arthritis. Mean age 69.21 years, participating in Arthritis Foundation Aquatics Programs for a mean of 2 years and 5 months. Majority were women (n=188). Having arthritis for a mean SD of 3.70+-1.75 years.	8-week aquatic exercise attendance (2-5 aquatic class per week)	Exercise-related: 3-item measure assessed the:(1)Goal difficulty, (2)Goal specificity. Task self-efficacy-3-item: participants' confidence in their abilities to attend AE:1 day, 2 days, and 3 days/wk for the subsequent 8 wks. Scheduling self efficacy: Likert scale. AE attendance	Baseline: Who agreed to participate completed the questionnaire at this time (n=64) or returned the questionnaire within 2 days (n=152). Finally, instructors recorded aquatic class attendance of study participants for the following 8 weeks.	Goal difficulty, specificity, and task self-efficacy were independent predictors of attendance ($P < 0.05$). High attendees had higher task and scheduling self-efficacy and lower goal difficulty than did low attendees ($P < 0.05$).	Individual differences may exist in goal setting and self-efficacy variables between individuals who attend a high number of aquatic exercise classes versus individuals who attend a lower number of classes. Support for the importance of exercise-related goal setting and self-efficacy was demonstrated. Implications pertain to the design of interventions to impact aquatic exercise.

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Pisters et al., 2010	Exercise Adherence Improving Long-Term Patient Outcome in Patients With Osteoarthritis of the Hip and/or Knee	Prospective observational follow-up study	2b	Determine the effect of patient exercise adherence within the prescribed physical therapy (PT) treatment period and after PT discharge on patient outcomes of pain, physical function, self-perceived	150 patients with OA of the hip and/or knee (women:77.0%);Age: mean SD years = 64.8+-7.9. Duration of symptoms:-1 yr (n=47,23,7%), 1-5 yr (n=72. 36,4%), + 5 yr(n=79;39,9%).	Patients were followed for 60 months. They did exercise therapy (ET): (1) an operant behavioral graded activity program and (2) usual ET, according to the Dutch physical therapy(PT) guidelines (of a 3-month period with a maximum of 18 sessions).Were advised to perform home exercises and home activities, and a more physically active lifestyle was stimulated. After the 3-month treatment period, PTh advised the patients to maintain the recommended exercise behavior.	Exercise adherence: 1-to home exercises and activities: self-report questionnaire,2-Patients' levels of physical activity: Short Questionnaire to Assess Health-Enhancing Physical Activity (SQUASH); 48hr before the assessment: Pain and Self-reported physical function(WOMAC);Physical functioning:5 meter walking test; Patient self-perceived effect: point scale	Baseline and 3, 15, and 60 months of follow-up. Association between: exercise adherence, patient outcomes of pain, physical function, and self-perceived effect	Adherence to recommended home exercises and being more physically active were significantly associated with better treatment outcomes of pain, self-reported physical function, physical performance, and self-perceived effect. The association between adherence and outcome was consistent over time. Adherence to home activities was only associated with better self-perceived effect.	Better adherence to recommended home exercises as well as being more physically active improves the long-term effectiveness of exercise therapy in patients with OA of the hip and/or knee. Better adherence is associated with better patient outcomes of pain, physical function, and self-perceived effect. Since exercise adherence declines over time, future research should focus on how exercise behavior can be stimulated and maintained in the long term.

Participants

Within the nine studies, 331 patients participated in HT, with an average age of 56,75 years (range 38–70y) and based on available data samples are majority with female (in six studies are 76,4 %, two studies only with female and one not reported this). The number of subjects randomized to the AE arm ranged from 6 to 125. The majority of the examinees participants (n=125) were included in the OA research by Cadmus et al. (2010) and the minority (n=6) in the CLBP research by Bello, Kalu, Adegoke & Agyepong-Badu (2010).

All experimental patients presented rheumatology conditions: one considered fibromyalgia (Munguia-Izquierdo & Legaz-Arrese, 2008), four CLBP (Bello et al., 2010; Cuesta-Vargas, Garcia-Romero, Dediego-Acosta, Gonzalez-Sanchez & Labajos-Manzanares, 2009; Cuesta-Vargas et al., 2012; Han et al., 2011) and four osteoarthritis (Cadmus et al., 2010; Fransen, Nairn, Winstanley, Lam & Edmonds, 2007; Lim, Tchai & Jang, 2010; Wang et al., 2012). However, in a research paper examinees with OA were all obese adults (Lim et al., 2010). Also in Cadmus et al. (2010) study, 51% were obese with OA. The duration of symptoms varied from 5 to 48 months to CLBP (1 study not reported this), 14 years to FM and only one study reports the duration of symptoms in OA patients (Fransen et al., 2007). In total, 276 examinees participated in this research. Drop-out rates for AE patients ranged from 6% to 25%. Three authors reported that a few patients (n=5) experienced an exacerbation of pain in land based exercise (LBE). Extraneous causes such as factors unrelated to the treatment, medical reasons, did not attend, time issues and not interesting in LBE (n=4) or travel difficulties were more responsible rather than the deleterious side effects of treatment. One study did not explain the inclusion/exclusion criteria neither the dropouts. Two studies investigated the exercise adherence levels and retention at 12 months after the completion of the program in OA older adults (n= 249) (Cadmus et al., 2010) and FM middle age women (n=53) (Munguia-Izquierdo et al., 2008) had different findings. In the first study the unequal dropout rate between study arms was a limitation of the study and the acquisition of medical problems was associated with poorer adherence to exercise program among older adults with functional limitations. The opposite occurred in the second study (Munguia-Izquierdo al., 2008), the authors emphasized the elevated adherence to the exercise program in the exercise group and suggested that their aquatic program is an adequate type of exercise to cause elevated exercise adherence. However both studies had different ages of samples (the first had

older men: 55-75 yr, whilst the second was with women aged 40-50 yr), with different pathologies and functional limitations.

The stage 2 of this review resulted in five articles. In these studies, 894 individuals participated with an average age of 65,50 years (range 55 –76,5 years): 838 in four observational studies (completing questionnaires) and only 58 participated in a RCT study. Samples were majority with female: the mean in four studies was 81, 43 % and one study was majority with ankylosing spondylitis (AS) male (79%). All patients presented with rheumatology conditions: 201 AS (Brophy et al., 2012), 56 chronic pain, (Tse, Vong & Tang, 2012), 271 RA (Hurkmans et al., 2010), 216 adults with arthritis (OA, FM and RA) (Gyurcsik, Estabrooks & Frahm-templar, 2003) and 150 patients with OA of the hip and/or knee (Pisters et al., 2010). Mean duration of the disease was 3.70 (SD +-1.75 years) to 22 years (SD+- 15) and one study no reported this (Tse et al., 2012).

Intervention

Where reported, treatment was performed in groups of four to twenty four patients supervised by physiotherapists (n=5) or trained instructors (n=2). Two studies did not explain who were the treatment providers. Six studies used programs designed by a physiotherapist or fitness professional, two used the AFAP, a standardized, preexisting, community-based program and one study did not mention this. In six studies, the range temperature of the water was 29º - 34º, and only 2 studies reported the depth of the water (Cuesta-Vargas et al., 2012) which was 2.15 for deep water running (DWR) and 115 cm (Lim et al., 2010), the others reported the depth of the water which was between waist and chest height. The intervention setting in three studies indicated that hospital or clinic pools were used. Five used community or public swimming pools and two omitted to report the treatment setting. Seven articles reported the aims of the AE intervention and details, however brief, of the specific activities were mentioned in all, but less in two. Munguia-Izquierdo et al. (2008) provided poor information about the aquatic program design and did not provide enough information about the exercise interventions thus hindering their replicability. Cadmus et al. (2010) and Wang et al. (2012) used the AFAP, a standardized preexisting community-based program aimed at improving the wellbeing of people with arthritis. By categorizing the activities, it was

possible to identify two types of AE program: DWR and HT or AE program that included elements of muscle strengthening, increasing range of movement, flexibility, aerobic exercise and relaxing exercise. Of the articles in which aerobic exercise was reported, all based the exercise intensity on heart rate. In the 7 studies, sessions were performed in shallow water (between waist and chest height) and were divided into: warm-up: 5-10 min., main exercise: 20-40 min, cool-down: 5-10 min. The 2 studies performed in deep water had 20-30 minutes sessions.

On stage 2, in the RCT study the experimental group (n=31) received an 8-week integrated motivational interviewing (MI) and physical exercise program whilst the control group (n=25) received regular activities in the center (Tse et al., 2012). The patient assessment (with questionnaires) was made before and after the MI and physical exercise program. In 2 cohort studies without any intervention, AS and RA participants completed questionnaires about multiple aspects of their disease, physical activity level, regulation style and autonomy supportiveness of their rheumatologists (Brophy et al., 2012; Hurkmans et al., 2010). In the Gyurcsik et al. (2003) study, 216 adults with arthritis, participating in Arthritis Foundation Aquatics Programs for a mean of 2 years and 5 months were asked to complete the questionnaires and then instructors recorded aquatic class attendance of study participants for the following 8 weeks. In another cohort study, 150 patients with OA of the hip and/or knee were followed for 60 months (Pisters et al., 2010). They did exercise therapy with an operant behavioral graded activity program (of a 3-month period with a maximum of 18 sessions) and were advised to perform home exercises and home activities, and a more physically active lifestyle was stimulated. After the 3-month treatment period, Physiotherapists advised the patients to maintain the recommended exercise behavior. Questionnaires were completed at baseline, 3, 15, and 60 months of follow-up. Therefore, there was only a new intervention in two studies in the others studies participants responded to questionnaires without changing their daily routines (Pisters et al., 2010; Tse et al., 2012).

Outcome Measurement

Pain outcomes were measure before and after intervention in each reviewed study; follow-up data were reported in 2 studies (Cuesta-Vargas et al., 2012; Fransen et al., 2007). A

variety of instruments were used to measure sensory pain, with the 10-cm visual analog scale (VAS) being the most common for 5 studies. Other instruments included pain subscales and a variety of self-report questionnaires: "Brief Pain Inventory" (BPI), "Knee Injury Osteoarthritis Outcome Score" (KOOS), "Eight-item version of the Arthritis Self-efficacy scale", the number of swollen joints, tender joints and tender point count (syringe calibrated), "Medical Outcomes Study Short Form 12 Health Survey" (SF-12), Related Quality of Life, "Western Ontario and McMaster Universities Osteoarthritis Index" (WOMAC). Most studies included pain as a primary outcome measure (n= 7) and the other 3 used function and body fat (Lim et al., 2010), quality of life (Cadmus et al., 2010) and FM symptomatology. The others outcomes were: physical and mental health, muscle strength, spinal flexibility, functional fitness, functional status, knee range of motion, distance that participants can walk, knee-related quality of life, self-efficacy for pain and symptom control, activity limitation, depression, physical impairment, body mass index (BMI) and disability.

On the stage 2, pain outcomes were measured only in four studies and a variety of instruments were used to measure pain intensity (11-point numerical rating scale - NRS), pain locations (body chart), the self-efficacy in coping with activities in spite of pain (Pain Self-Efficacy Questionnaire - PSEQ) (Tse et al., 2012) and indirectly with the "Rheumatoid Arthritis Disease Activity Index" (RADAI) (Hurkmans et al., 2010), "Bath Ankylosing Spondylitis Disease Activity Index" (BASDAI) (Brophy et al., 2012) and with pain subscale of the "Western Ontario and McMaster Universities Osteoarthritis Index" (WOMAC) (Pisters et al., 2010). One study didn't measured pain (Gyurcsik et al., 2003). The others outcomes were: motivation for exercise (Breq_2), physical activity (IPAQ-SF, SQUASH), physical performance (5 meter walk test), mobility and balance ("elderly mobility scale" - EMS), generic health status and quality of life (EQ5D, SF-12), depression and anxiety ("hospital anxiety and depression scale", "state-trait anxiety intensity" and "geriatric depression scale"), happiness ("subjective happiness scale"), disease activity and ability to function (BASDAI, RADAI, WOMAC) and others instruments were used to assess regulatory style concerning physical activity, autonomy supportiveness of the rheumatologists (HCCQ), goals difficulty and specificity to attend aquatic classes, scheduling self-efficacy assessed participants, patient self-perceived effect and exercise adherence/attendance to AE, home exercises and others physical activities. Who agreed to participate completed the questionnaire at the baseline (Gyurcsik et al., 2003), before and after intervention (Tse et al., 2012) and follow-up data

were reported only in 3 studies (Brophy et al, 2012; Hurkmans et al., 2010; Pisters et al., 2010).

Primary outcomes – Chronic Pain

Aquatic Exercise *versus* Non-Exercise Controls

Of the three studies in this comparison (Cadmus et al., 2010; Han et al., 2011; Munguia-Isquierdo & Legaz_Arrese, 2008), one had score 7/10 in PEDro scale (Munguia-Izquierdo et al., 2008) the others were score 4/10. All studies showed a significantly post treatment effect in reducing pain in favor of AE however, the analysis based on the review of the results reported by researchers showed a lack of consistency between study results. In summary, the evidence shows beneficial treatment effect in favor of AE compared with no exercise.

Aquatic Exercise *versus* Land Exercise

Four studies were identified in this comparison (Bello et al., 2010, Fransen et al., 2007; Lim et al., 2010, Wang et al., 2010) with score in PEDro scale: 8/10, 7/10, 7/10, 4/10 respectively. Three of these studies (Bello et al., 2010; Lim et al., 2010; Wang et al., 2010) showed that AE significantly reduced pain, however concluded that both aquatic and land-based exercise (LBE) programs are effective in reducing pain. In summary, the evidence suggests that AE and land-based exercise have comparable pain-relieving effects. The maximum number of groups in these research papers was three. In three researches the authors compared AE, LBE and a non-exercise control group (nCG) (Lim et al., 2010; Wan et al., 2010) and the other compared the effectiveness of AE in FM females with a non-exercise FM CG and with non-exercise healthy women group (Munguia-Izquierdo et al., 2008) and results were similar: AE and land-based exercise have comparable pain-relieving effects and both are more effective in the relief of pain than no treatment and for all the measurements, the FM patients showed significant deficiencies compared with the healthy subjects.

Aquatic Exercise (DWR) *versus* another Land Intervention

Two studies were identified in this comparison (Cuesta-Vargas et al., 2009; 2012). One of these compared the addition of deep water running (DWR) to standard general practice (GP) versus GP (consisting of education and advice regarding exercise) care alone. The second one compared the addition of deep water running (DWR) to EBP (personalized physical exercise program, manual therapy and health education) versus EBP care alone. Both study found post intervention differences in pain outcomes between DWR and DWR with another Land Intervention. DWR plus usual GP care was more effective in reducing pain. However the effect was clinically relevant for pain in both: the EBP with DWR group (0.70) and in the EBP group (0.58). The researchers suggested that better results were achieved with an individualized plan of strategies and CLBP may be favored by aerobic exercise at the AT (Cuesta-Vargas et al., 2009).

Secondary Outcomes: Motivation or adherence for Exercise and their influence on chronic pain.

All the four studies in this review showed that exercise does improve function, especially for those with severe disease. In addition, people with high intrinsic motivation (driven by pleasure) had the greatest benefit to activity and function as much as exercising itself, with a pain relive effect (Brophy et al., 2012; Hurkmans et al., 2010; Pisters et al., 2010; Tse et al., 2012). So, it seems that more autonomous regulation was univariately associated with more physical activity, lower disease activity and with better outcomes of pain (Hurkmans et al., 2010). However, other studies have found that people with more pain (and osteoarthritis) were more motivated (though not necessarily more active) (Damush et al., 2005) and in AS, it has previously been found that people with more disability were found to exercise more frequently than those with less disability (Falkenbach et al., 2003)

Therefore, interventions targeting motivation to exercise should have as much effect on improving function as interventions offering exercise opportunities. In addition, any intervention that improves motivation and increases opportunities to exercise would have a 2-

fold influence on function (Brophy et al., 2012). As with the physical exercise program, also MI is effective in improving pain, physical mobility, psychological well-being and self-efficacy for community-dwelling older persons with chronic pain, promoting more autonomous motivation (Tse et al, 2012).

One study demonstrated that better adherence to home exercise programs as well as being more physically active improves the long-term effectiveness of exercise therapy in patients with OA of the hip and/or knee. Both within and after the treatment period, and like the other studies better adherence to exercise is associated with better patient outcomes of pain, physical function, and self-perceived effect (Pisters et al, 2010). Although the Gyurcsik et al. (2003) study did not evaluated relationship between motivation to exercise and chronic pain, this study concluded that exercise related goals and specific types of self-efficacy may be important correlates of AE attendance and individual differences may exist in goal setting and self-efficacy variables between individuals who attend a high number of AE classes versus individuals who attend a lower number of classes. So support for the importance of exercise-related goal setting and self-efficacy was demonstrated. We can conclude that greater sense of self-efficacy and competence promotes more intrinsic motivation, autonomy and more attendance with a decreased level of pain.

DISCUSSION

The objective of the present SR was to evaluate the available evidence for the effectiveness of HT in chronic pain. Our findings suggest that patients with chronic pain who received HT treatment gained some beneficial effects in improving their health status (e.g. reduced pain scores) compared with no-exercise controls. Studies show a significant post treatment effect in favor of HT in the short term. However, the long-term benefits were found to be inconclusive. In six studies, exercise was performed in water ranging from 29º to 34º C., which encompasses a wide range of water temperature from cool to near thermoneutral (usually described as 34.5°–35°C). There is an assumption, by therapists and patients alike, that warmer water is more conducive to pain relief, and the mechanisms whereby heat alters pain perception are well known. The contribution of the warmth of the water to pain relief during HT therefore remains speculative. Several researchers have also reported a relationship

between water temperature and adherence, which suggests that thermal comfort, is an important environmental factor in patients (Cochrane, Davey & Matthes, 2002). Nevertheless, in this SR the authors did not mention this as a cause of dropout or adherence.

Indeed, we found evidence that aquatic aerobic exercise in deep water (DWR), even in colder temperatures below thermoneutral, has an effective complement to other types of interventions (CG, EBP) for reducing pain (Cuesta et al., 2012). So the effective AE can be practiced in community settings that traditionally maintain lower temperatures than hospital-based reducing water heating costs spending as well as on treatments. Thirty-three percent of studies in this review failed to cite water temperature, so this should be reported in future AE studies. Also, some studies fail to provide an adequate description of its type and intensity programs. The effect of exercise-induced analgesia on pain suggests that pain intensity is reduced after a high-intensity in aerobic exercises (ie, >70% of maximal aerobic capacity) (Koltyn & Umerda, 2006) but more studies are necessary to understand the accuracy of exercise prescription based on predicted maximal heart rate, particularly AE in older people. The interaction between exercise intensity, water depth and temperature, as well as having practical considerations, like the duration of the AE program, may affects pain relief differentially (Hall et al., 2008). Assis et al. (2006) concluded that after a 15-week deep water running program at the intensity of the anaerobic threshold, the reduction of the pain occurs in 36% of patients with fibromyalgia.

A national survey in the UK by Bryant et al. (2009) reported that the median optimal number for the aquatic treatment of RA patients was six weeks. So, probably the optimal duration to have an effect on pain relief may be related among other factors like the type of conditions to be treated. The three studies (Cadmus et al., 2010; Munguia-Isquierdo et al., 2008; Han et al., 2011) comparing AE and no-treatment controls are homogenous in terms of the type of exercise performed within the pool environment (one did not mention pool type), but appraised differed in the frequency and duration of the HT sessions, ranging from 8 to 16 weeks and inversely times per week. The study that had 16 weeks treatments (3 times per week) report more significant differences between groups than the others. Therefore, we were unable to determine from the present review the ideal number of HT sessions that are needed for patients to derive clinically significant benefit from this intervention. A possible explanation for this might be that each study was designed with specific targets, goals and to different diseases groups. The duration of AE programs for maximum pain relief is both

clinically and economically important and warrants further investigation by good-quality studies (Hall et al., 2008).

In our SR, we found no significant differences effects on pain relieve between aquatic and land-based exercise, however AE may be an effective tool for patients with obesity who have difficulties with active land exercise due to osteoarthritis. This was confirmed by one study, which found a higher dropout level in land exercises groups compared to AE groups (Lim et al., 1010).

Although only two DWR studies have been used in this SR, their quality level was 6 and 7 (score in PEDro scale) and the results were similar to a recent SR of 10 studies of the effects of deep water running in older adults (Jorgic, Milanovic, Aleksandrovic, Pantelic & Daly, 2012). The researchers reported that in two studies the applied exercise programs in both experimental DWR groups produced a statistically significant reduction of the feeling of pain in adults with nonspecific CLBP (Assis, et al., 2006; Cuesta-Vargas, Garcıa-Romero, Arroyo-Morales, Diego-Acosta & Daly, 2011). For the authors, this indicates that DWR has a positive influence on the reduction of the feeling of pain, but there are no advantages in comparison to the program of land-based exercise. The studies in a recent SR (n=10) show that deep water exercise produces physiological responses necessary for improving health and normal functioning in everyday activities and reducing pain in elderly people (Jorgic et al., 2012). In 9 articles, pain outcomes were measured before and after intervention, but follow-up data were reported only in 2 studies. In both studies the authors mentioned that the results were maintained in pain reducing in OA at 5 months (Fransen et al., 2007) and in CLBP at 12 months of follow-up (Cuesta-Vargas et al., 2012).

The second objective of this SR was to evaluate the available evidence for the effects of exercise motivation or adherence in chronic pain. Our findings suggest that patients with chronic pain who are well motivated to exercise, gained some beneficial effects in improving their health status (e.g. reduced pain scores). Thus, improving motivation is as important as improving physical activity. Intrinsic and identified motivation appear particularly important, so exercise referral or advising physiotherapy alone are unlikely to result in improved exercise or function. Instead, strategies should include both exercise or physiotherapy and working with people to improve intrinsic motivation such as MI and goal setting. The integrated MI and physical exercise program provide evidence of success in improving pain, physical

mobility, psychological well-being and self-efficacy for community-dwelling older persons and contribute to the increase in self-efficacy and compliance with the exercises (Tse et al., 2012). Besides the MI should also be promoted to healthcare professionals, because it enhances the communication between clients and healthcare providers, as well as changing healthcare providers' routine practice from authorizing patients to developing partnerships with them. It seems that more autonomy supportiveness from the rheumatologists does not predict a higher level of physical activity and does not significantly contribute to a higher level of physical activity when the regulatory style is taken into account. Therefore, in patients with a more autonomous regulation, receiving more autonomy supportiveness does not necessarily lead to a higher physical activity level (Hurkmans et al., 2010). Our findings suggest that in future research, the role of autonomy supportiveness with respect to the physical activity behavior of patients should be evaluated in the context of a specific physical activity intervention, and include, apart from the rheumatologist, relevant health professionals such as physical therapists and clinical nurse specialists as well.

We found some limitations in these studies: four studies have a cross-sectional design, and should therefore be complemented by a follow-up over time in order to allow for firmer conclusions about causality. The physical activity measures used in these studies is self-reported and therefore may not always be accurate. On the other hand, a self-report questionnaire has the advantage that it is a simple method to evaluate exercise adherence and levels of physical activity. However, studies should use a combination of methods such as a questionnaire combined with diaries, interviewing, pedometer or accelerometer in order to evaluate exercise adherence or get accurate estimates of activity. Also, it is quite possible that the most motivated patients responded to questionnaires, which could have resulted in a higher score for autonomous regulation in some studies. Some studies differs from the others which have found that people with more pain were more motivated (though not necessarily more active) and in AS, it has previously been found that people with more disability were found to exercise more frequently than those with less disability. The mean disease duration of most patients with chronic pain included in our SR was 3.70 (SD +-1.75 years) to 22 years (SD+- 15), so most conclusions are limited to patients with an established rheumatic disease. We know the on the onset of the disease, patients experience in general a more unstable disease course with flares of disease activity and pain, so is unknown to what extent the disease course and the patient's adjustment influence regulation style. Only in one study

(Gyurcsik et al., 2003) the findings pertain to a select group who had arthritis for a relatively short duration, and had been exercising in their aquatics classes for 2 years. Also in this study, the findings may not generalize to individuals who have arthritis for longer periods of time, are attempting to initiate AE, and/or are attempting to initiate or adhere to other types of exercise.

The present review had several limitations. First, the review focused only on studies published in English; it is possible that potentially relevant articles published in other languages may have been missed. Such studies were excluded because of the limited resources available for the present review. Second, some of the studies did not give detailed information about their data analysis. This will have affected the conclusions drawn from these studies, so caution is required in the interpretation of their findings. Third, the variation in the dosages of the intervention in the studies analyzed makes it difficult to provide clear guidance in this area. Fourth, we did not investigate the motivation for HT or AE. Unfortunately, none of the studies reviewed reported or quantified the different motivational regulations (internal and external) as well as amotivation to practice the same. Finally, the 1-stage on present review focused on RCTs. It is therefore imperative that future studies assess the value of grey literature and case-controlled studies to evaluate the benefit of HT for chronic pain.

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Capitulo 2 – Analysis of the motivation for hydrotherapy in users with chronic pain

Background: Chronic musculoskeletal pain is a leading cause of disability. Hydrotherapy (HT) is one of the therapeutic interventions most sought for pain relief and to improve function and quality of life. Although the existing evidence suggests this effectiveness of HT and the beneficial effects of exercise we continue to observe poor adherence, motivation and maintenance to this aquatic exercise.

*Objective***:** Analyze the association between motivation and chronic pain, function and quality of life, during a three months HT program for treatment of chronic pain in adults and elderly.

Methods: One hundred and twenty four adults and elderly with chronic pain were enrolled in a 13-wk trial, two to three sessions per week, of a preexisting community-based HT program. Demographics were collected at baseline (83.1% female, 60.5±10.2y) and patient-reported outcomes were collected by questionnaires at baseline and after 13 wk. These questionnaires captured chronic pain -specific disease activity, pain, function and quality of life and included instruments related to motivation to aquatic exercise (HT). A separate interview was performed at the baseline and after 3 months assessing pain (VAS for pain).

Results: Over half of the participants reported having chronic pain for more than 10 years (most common pain was lumbar 90,3%). A moderate adherence (68%) to an aquatic therapy program, in a warm pool, improved most of the symptoms ($p<.05$) on chronic pain patients. Improvement in function and quality of life was higher for people who improved motivation for HT and increased physical activity. However, people with decreased pain, increased amotivation for HT as well as female participants reported marginally significant increases in amotivation when compared to men. The association between adherence and outcomes was consistent over time, however a small decrease in attendance was observed, while older participants were those who had more attendance.

Conclusion: A 13 weeks HT program seems to be effective in reducing pain, improving function and quality of life in people with chronic pain. Furthermore both attendance and motivational orientation to HT have a significant effect on pain, function and quality of life with pain as the main external regulator for HT.

Key Words: *Hydrotherapy, Motivation, Chronic Pain, Disability, Function, Quality of life, Adults, Elderly*.

Chronic musculoskeletal pain is a common complaint among older persons living in the community (Chung & Wong 2007, Kean, Rainsford & Kean, 2008, Tsai, Liu & Chung, 2010).There have been a various definitions of chronic pain, like a persistent or recurrent pain, lasting more than three months which may persist beyond the healing of the injury that gave rise to it (Turk & Okifuji, 2001). The International Association for the Study of Pain (IASP) provides the most referenced chronic pain definition, taking into account only criteria of duration and appropriateness (Baranowski et al., 2011). The IASP defines chronic pain as a pain that has persisted beyond the normal tissue healing time and proposes 3 months as a convenient cut-off point.

A large survey to explore the prevalence, severity, treatment and impact of chronic pain in 15 European countries and Israel, demonstrated that chronic pain of moderate to severe intensity occurs in 19% of adult Europeans, seriously affecting the quality of their social and working lives. They concluded that chronic pain is a major health care problem in Europe and needs to be taken more seriously (Breivik, Collett, Ventafridda, Cohen & Gallacher, 2006). Another cross-sectional nationwide epidemiological study, with 5,094 participants showed that chronic pain is a significant problem that is present in 37% of the Portuguese adult general population and was associated with high personal, family, and social burden, and affects in particular the most vulnerable subgroups of the population (Azevedo et al., 2012). As a chronic disease it presents a socio economic problem in our society often leading to a decrease in function, quality of life and depression associated with musculoskeletal chronic pain (Almeida, Heitor, Benedict, Gusmão & Xavier, 2005). No other health problem causes much disability as chronic pain, which is generally recognized as a major public health problem (Azevedo et al., 2012).

Aquatic Exercise (AE) in warm water usually has been known as HT, or Aquatic Therapy (AT), or aquatic physiotherapy (AP), and represents a popular treatment for many patients with painful musculoskeletal conditions. Pain-relieving effects have been attributed to a wide variety of mechanisms (Hall et al., 2008). The warmth and buoyancy of water may block nociception by acting on thermal receptors and mechanoreceptors, thus influencing spinal segmental mechanisms (Bender et al., 2005). In addition, the warmth may enhance blood flow, which is thought to help in dissipating algogenic chemicals, and it may facilitate muscle relaxation. The hydrostatic effect may also relieve pain by reducing peripheral edema and by dampening sympathetic nervous system activity (Gabrielsen, Videbaek & Johansen,

2000; Kamioka et al, 2011). Some reports have demonstrated the effectiveness of water exercise in relieving chronic pain and the beneficial effects of physical activity and regular exercise on the physical, psychological, social welfare and health promotion, however we continue to see a poor adherence and maintenance to exercise and physical activity (Alves, 2005; Berger, Pargman & Weinberg, 2002; Biddle & Mutrie, 2001; Dosil, 2008; Hall et al., 2008; Kamioka, Nakamura and Yazaki, 2006; Kamioka, Ohshiro & Mutoh, 2008; Lee, Rexrode, Cook, Manson & Buring, 2001; Pargman & Weinberg, 2002; Sisson & Katzmarzik, 2008).

Graded exercise programs are effective interventions for patients with hip, knee OA or CLBP, with both strength training, mobility and stretching exercise demonstrating significant improvements in pain, physical function and general health status, as well as individually supervised specific spinal stabilization exercises have been reported to decrease the intensity of CLBP and protect against recurrence (Brosseau et al., 2004; Fransen, McConnell & Bell, 2003; Maher, 2004; Pelland et al., 2004). More recently, highly intensive aerobic exercise has been incorporated in the treatment for OA, FM and CLBP, with a significant decrease in pain and associated with activation of the hypothalamus–pituitary–adrenal axis and plasma cortisol concentration levels increase during exercise intensity above 60 % of max VO2 (Chatzitheodorou, Kabitsis, Malliou & Mougios, 2007). Doing active aerobic exercise seems better in water, the buoyancy of the water improves fitness with low risk of musculoskeletal injuries accrued with continuous impact on the skeletal system (Dowzer, Reilly & Cable, 1998; Waller, Lambeck & Daly, 2009). Recent evidence indicated that "deep water running" (DWR) has been beneficial in the treatment of chronic musculoskeletal pain conditions such as FM and CLBP (Cuesta-Vargas et al., 2011; Dundar, Solak, Yigit, Evcik & Kavuncu, 2009, Jorgic et al., 2012). However the adherence to exercise programs is also poor and most patients with chronic pain are sedentary (Hootma, Macera, Ham, Helmick, & Sniezek, 2003; Munro, Nicholl, Brazier, Davey & Cochrane, 2004).

Sixty percent of adults in Europe engaged in no physical activity or sports on a typical week (Special Eurobarometer, 2010). According to the UK Office of National Statistics, between October 2011 and October 2012 (Rendall, C., 2013), only a third (32,4%) of adults aged 26 and over, in England, participated in at least 30 minutes of sport at moderate intensity at least once a week and men were more likely than women to participate once a week (41.1% and 31.1% respectively). In Portugal only 23% of the population practice

exercise and sport (19% do it on a regular basis and 4% occasionally) with a dropout of 59% (Marivoet, 2001). The rate of physical activity in Portugal stands at 8%, far below the European average (17%) (study conducted by the European Union over its citizens and sport, Eurobarometer_213, 2004). A more recent study also conducted by the European Union on sport and physical activity (Eurobarometer_334, 2010), between 2004 and 2010, demonstrated that there were no major changes, and there was only a slight improvement in the average weekly physical activity. Baptista et al. (2012) described the prevalence of physical activity in a representative sample of the Portuguese population (n= 4696) aged 10 yr and older using accelerometry. They found that young and old people, particularly girls and women, showed the lowest values of physical activity and should thus be target groups for prevention strategies aimed at increasing physical activity. Apart from the poor adherence to exercise, it appears, from the literature most participants leave their programs after a few months, undergoing a 45% sharp decline in the first six months, stabilizing then, although with a slight decrease up to 18 months (50%), implying that the benefits to health are not sufficient (Berger et al., 2002; Buckworth & Dishman, 2002). Indeed, many findings suggest that many people lack sufficient motivation to participate in the 150 minutes of moderately intense exercise per week recommended (Garber et al., 2011). In sum, large numbers of individuals are either amotivated or not sufficiently motivated to be physically active, or are motivated by types of externally-driven motivation that may not lead to sustained activity (Teixeira, Carraça, Markland, Silva & Ryan, 2012).

Knowing that motivation is a critical factor in supporting sustained exercise, a lack of motivation can be explained by people not being sufficiently interested in exercise, or not valuing its outcomes enough to make it a priority in their lives (Ryan, Williams, Patrick & Deci, 2009) or may not feel sufficiently competent at physical activities, feeling either not physically fit enough or skilled enough to exercise, or they may have health limitations that present a barrier to activity (Korkiakangas, Alahuhta & Laitinen, 2009). Also, many people are unmotivated and have no intention to be more physically active or are not sufficiently motivated in the face of other interests or demands. Therefore the type of motivation to exercise is different between individuals but may, in the same individual, change over time. . So, it is important to analyze the motivation to adhere to exercise, in this particular case for HT, quantifying the different motivational regulations (internal and external) as well as amotivation.

A privileged theory that examines the effects of different kinds of motivation, which can influence behavior is the Self-Determination Theory. SDT is a macro theory of human motivation (Deci & Ryan, 2008b) that studies the personality development and functioning in social contexts and the causes and consequences of self-determined behavior. According to its authors (Deci & Ryan, 2008a; Ryan & Deci, 2007) , this theory explains that the motivation is not directly related to the factors of social involvement, since the influence of these factors (e.g. nature vs indoor activities or behavior of instructors) is mediated by the satisfaction of three essential nutrients (Ryan & Deci, 2007), i.e. the psychological basic need autonomy (ability to regulate their own actions), competence (the ability to effectively interact with involvement) and relationship (ability to search and develop connections and interpersonal relationships). These basic psychological needs, will determine the regulation of the subject behavior, which is based on a motivational continuum and varies between less and more self-determined forms (controlled versus autonomous). Therefore, according Deci and Ryan (2008b), the central SDT differentiation is between autonomous motivation (incorporating the intrinsic, integrated and identified regulations), and controlled motivation (which incorporates introjected and external regulations).

When people are autonomously motivated, they experience pleasure (governing their behavior by decision and willingly) or feelings of self-approval of their actions. When people are with controlled types of motivation, they experience pressure situations to think, feel or behave in a particular way (governing their behavior by external determinations), which leads to a detrimental effect on the psychological functioning. Additionally, the theory predicts that there is amotivation, a state that reveals a lack of regulatory process. According to Ryan and Deci (2007) intrinsic motivation is among the most important factors for the maintenance of exercise behavior, since people who intrinsically regulate their motivation, demonstrate greater persistence, commitment, effort and pleasure in activities that perform (Deci & Ryan , 2008a). Also a recent systematic review demonstrated the value of SDT in understanding the behavior to exercise, demonstrating the importance of autonomous regulations in promoting physical activity as well as the beneficial role of the development of autonomous self - regulation , is predominantly through autonomous forms of extrinsic regulation or by enhancing intrinsic motivation , also showed that all forms of autonomous regulation predict participation in the exercise (Teixeira et al., 2012) .

This theory has been applied in the last three decades, in various contexts, including education, religion, politics, work, family and also in the context of physical activity (Deci & Ryan, 2008a; Ryan & Deci, 2007; Ryan, Williams, Patrick, & Deci, 2009) however there are few studies in the health context of chronic pain, therefore the relevance and pertinence of this study. With this study we intend to investigate if the community HT program decreases chronic pain, improves function and quality of life and to understand what motivates people to participate in this program, the kind of motivation and if (and how) that varies over time, trying to quantify the different internal, external regulations and/or amotivation to HT and linking them with changes in chronic pain function and quality of life. Understanding this dynamic is relevant because it can help us to influence behavior change for HT and thus obtain the desired benefits for the community (reducing pain, improving quality of life and functionality), through the more autonomous regulations. It is probable that the initial focus on hydrotherapy is associated to a decrease short-term pain, while the changes in motivational factors relate to exercise, with a special emphasis on intrinsic sources of motivation (eg, interest and enjoyment in exercise), should play a more important role in the control of long-term pain. These hypotheses are similar to those reported results in other studies related with weight management (Teixeira et al., 2006).

The objective of this study is to analyze the association between motivation and chronic pain, function and quality of life, during a three months HT program for treatment of chronic pain in adults and elderly.

Our first hypothesis was that pain, function and quality of life were reduced from the beginning to the end of the program. The second hypothesis stated that a more autonomous regulation for HT is associated with lower levels of chronic pain and an improvement in function and quality of life.

METHODS

Study Design

We performed a longitudinal quasi-experimental study (performed between April 2013 and July 2013) investigating the effect of HT and motivation and/or adherence to HT on pain, function and quality of life in individuals with chronic pain.

Participants

Participants were recruited in a convenience sample and included 124 individuals with chronic pain participating in a preexisting community-based HT program for a mean of 5,5 years in two community pools. Initially 184 persons were identified as eligible, of which 124 finished the program (fig. 1). Eighteen patients did not meet the inclusion criteria (had other pathology or no chronic pain) and 42 dropouts (1 with no reason, 8 had economic reason, 15 not delivered questionnaires, and 18 had incomplete data. From 124 persons forming the sample 90,3% had CLBP (*n* = 112) and/or 34,7% (*n* = 43) were suffering from OA of the hip and / or knee and 4,8 % (*n* = 6) had FM. From the sample 63, 7 % (*n* = 79) reported chronic pain in other body region (cervical, shoulders, arms, hands and/or feet).

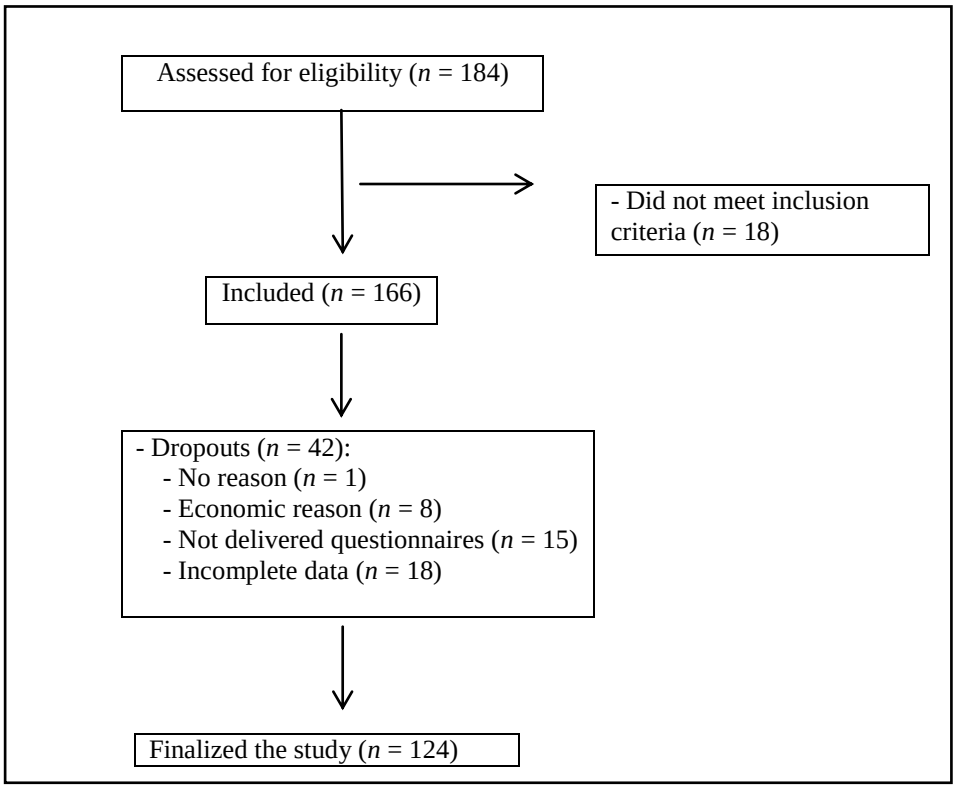


Figure. 1 - Trial flowchart

People were asked to attend at least two and three HT sessions per week, in a 13-wk trial and complete questionnaires about multiple aspects of their disease at baseline and after 3 months. These questionnaires captured chronic pain-specific disease activity, pain, function and quality of life and included instruments related to motivation to exercise (HT). A separate interview was performed at the baseline and after 3 months assessing pain (VAS for pain). All

subjects participated in the study voluntarily. Inclusion criteria included adults suffering from chronic musculoskeletal pain and being oriented as to time and place. Patients with cognitive degeneration or other neurological or psychiatric problems were excluded. Ethical approval for the study was gained from the community pools (Appendix 1). All participants gave full informed, written consent, and anonymity was preserved at all time (Appendix 2).

Outcome measures

Demographic data including age, gender, occupation, menopause age and reason, weight, height, body mass index (BMI), pathology, chronic pain years, type of pharmacological drugs usually used and time performed in HT were collected at the baseline assessment. The weight was measured with a tetrapolar OMRON BF 500, height with a standard stadiometer and BMI was derived from adult' weight in kilograms (W) and height in meters (H), BMI = W/H^2 The clinical outcome measures were pain, disability and general health. Data collection was at baseline and 3 months (postintervention). Pain was evaluated using a 100-mm visual analogue scale (VAS) (Huskisson, 1974) in which "0" is defined as no pain and "10" is defined as the worst pain ever felt. It has been appraised to be a valid, reliable and responsive technique for assessing pain (Annex 1).

To measure pain, physical and functional disability for patients with chronic low back pain (CLBP) we used the Quebec Back Pain Disability Scale (QBPDS) (Kopec et al., 1995; 1996) validated by Nunes, Ribeiro and Cruz (2005). QBPDS (Annex 2) consists of 20 items aimed at measuring the level of functional disability in patients with Low Back Pain. The items correspond to different activities of daily living (eg "Getting out of bed", "Sitting in a chair for several hours", "Load two shopping bags"), easily identified and reproduced in the daily lives of participants. Each item is scored on a 6-point scale (0 - without any difficulty and 5 - unable to perform), to obtain the total score by adding the scores for each item (between 0 and 100). The scores ranging between 0 and 30 indicate the existence of a functional and low scores above 50 indicate an significant level of functional disability (Reneman, Jorritsma, Schellekens & Goëken. 2002).

To assess disabilities related to lower limb, pain and self-reported physical function in osteoarthritis(OA) patients, we used the Portuguese version of the Western Ontario and McMaster Universities (WOMAC) (Bellamy, Buchanan, Goldsmith, Campbell & Stitt, 1988;

Bellamy et al., 1997) validated by Carvalho, Perloiro & Machado (2000). The WOMAC (Annex 3) contains 24 questions in a self-administered questionnaire; the questions are categorized into 3 subscales (pain, stiffness, physical function. In this study, we used a 5-point Likert scale format. Scores for each subscale were determined by summing the scores of the component items within that subscale (possible score range: pain, 0-20(5 items); stiffness, 0-8 (2 items); physical function, 0-68 (17 items). The total aggregate scores (possible score range, 0-96) were determined by summing the scores of all subscales.

General health (physical and mental) was determined with the Portuguese Short Form 12 (SF-12) adapted from the SF-36 (Ware et al., 1996), validated by Ferreira (2000a, 2000b). The SF-12 (Annex 4) was designed to measure general health status from the patient's point of view. The SF-12 includes 8 concepts commonly represented in health surveys: physical functioning, role functioning physical, bodily pain, general health, vitality, social functioning, role functioning emotional, and mental health. Results are expressed in terms of two meta-scores: the Physical Component Summary (PCS) and the Mental Component Summary (MCS) components. The SF-12 is scored so that a high score indicates better physical functioning. The PCS and MCS scores have a range of 0 to 100 and were designed to have a mean score of 50 and a standard deviation of 10. Thus, scores greater than 50 represent above average health status. On the other hand, people with a score of 40 function at a level lower than 84% of the population (one standard deviation) and people with a score less than 30 function at a level lower than approximately 98% of the population (two standard deviations).

To explore motivation to aquatic exercise or HT participants were requested to complete the Portuguese version of the validated modified Behavioral Regulation in Exercise Questionnaire (BREQ-2) (Annex 5).The Behavioral Regulation in Exercise Questionnaire (BREQ) was originally developed by Mullan, Markland & Ingledew (1997), to measure the forms of exercise behavioral regulation (external introjected, identified and intrinsic), drawing on SDT, Markland, and Tobin (2004) developed the BREQ-2 to measure the continuum of behavioural regulation in exercise contexts and the portuguese version was adapted and validated by Palmeira, Teixeira, Silva and Markland (2007). The questionnaire, which assesses amotivation, external identified, and intrinsic regulations, consists of 19 items each answered in a Likert scale of five points (0-4). A measure of self-determination, named Relative Autonomy Index (RAI), can be derived from BREQ-2's subscales. Higher positive

scores for the RAI indicate more autonomous motivation, whereas lower negative scores indicate less autonomous motivation.

Aquatic exercise or HT attendance

Attendance at scheduled aquatic classes over the 13-week period following questionnaire administration served as a measure of exercise, this attendance was recorded by the aquatics physiotherapists and informatics system (Appendix 3). For each patient recorded the number of training sessions attended during the study, in 1, 2 and 3 months (13-week intervention). Because participants were registered for 2 to 3 aquatics class sessions each week, a standardization procedure was conducted. In order to standardize the unequal number of aquatic class sessions, a mean percentage of 13-week attendance was calculated for each participant by first dividing the total number of classes attended by the total number of registered classes for each participant. This value was multiplied by 100 to arrive at an overall mean attendance percentage. This procedure has been used in previously published exercise research (Gyurcsik & Brawley, 2000).

Procedures

This project was presented to the administration and to the board of directors of the public swimming pools chosen in Palmela municipality after administration agreement (Appendix 1); a meeting was performed with all 6 physiotherapists responsible for all HT classes in order to explain the study purpose and the procedures. A document containing the description of all procedures was delivered to physiotherapists and both secretariats (Appendix 4). All physiotherapists had the same training base in HT, however to ensure that all implemented the program in the same way, took place on the 1st month, a recycling “Workshop - Program Acqua Lusa" (Appendix 5). The authors conducted a survey of the users lists enrolled in the 14 HT classes and consulted clinical files, selecting those that met the inclusion criteria (age, chronic pain and not have neurological and / or mental diseases). It was explained in writing the study purpose and provided informed consent and guaranteed the volunteers confidentiality and anonymity. At baseline, we transcribed all demographics data and over one week the questionnaires were distributed by the Physiotherapists of each class (the WOMAC, SF12 and Breq2). The questionnaires were returned by volunteers within the following two weeks, in the pool`s secretariats. The VAS for Pain was assessed for all

participants individually. For three months, the "Acqua-Lusa" program was applied by 5 Physiotherapists to the participants.

Interventions

Acqua Lusa Program (ALP)

The ALP (Appendix 6) was designed by a senior HT physiotherapist, began in 1994 and was developed and improved based on the best evidence and in order to meet the user`s needs. The ALP is insert in a global physiotherapy program the "Aqua Physio Lusa Program", and includes educational (postural reeducation, respiratory control, aquatic adaptation, group therapy for pain managing), therapeutics, ludic recreation and social components.

In ALP the group trained first in a chest-high (1, 10 to 1.30 m) warm pool (29 – 30º C), 45 minutes, 2 and 3 times a week for 13 weeks. Each session included 10 minutes of warming up, first in earth near the pool and then with slow aquatic walks, mobility and functional exercises, 20- 25 minutes of strength and resistance exercise developed in progressive levels and speeds using water and aquatic materials as a means of resistance including a stepped progression during the program. Then 8 minutes of a highly intensive deep water aerobic exercise was performed developed progressively (over 13 wk) at intensity sufficient to achieve 60% to 80% of the age predicted maximum heart rate equation in water ((220 – age)-10). Heart rate was monitored using post-exercise auto palpation of pulse rates. During aerobic intervention, the water depth was 1.60 to 2.00 m and all participants were provided of the flotation belts. The physiotherapists supervised the technique, the exercise`s intensity and controlled the exercise workloads (Appendix 7). At the end a 10 minutes of cooling down phase was performed with low-intensity and relaxation exercises. The training progression used during the study program was based on others studies (Cuesta-Vargas et al, 2009, 2012; Munguia-Izquierdo et al., 2008; Wang et al., 2007) (table 1).

Theoretical and practice session "Chronic pain control and exercises"

A quarterly session for 1 hour in the community pools was conducted by a senior HT physiotherapist (Appendix 8). Participants were invited to participate in this session that aimed to explain what chronic pain is, strategies to cope and control chronic pain, exercise contribution for pain relief and training home exercises. Specific topics of pain management were discussed, regarding general knowledge of pain, pain assessment and the use of pharmacological and non-pharmacological methods.

Table 1: Training progression during the program

	Strength Training Progression						**Aerobic Training Progression**		
Period (wk)	Repetitions	Weekly Routines	Sets	Exercises	Duration (min)	Weekly Frequency	Intensity (%)HR max	Duration (min)	Weekly Frequency
1-2	10-15	I	1	Exercises nº 13 to 35	20-25	2-3	60	8	2-3
3-4	10-15	I	1-2				65		
5-7	10-12	II	1-2				70		
8-10	10-12	II	2-3				75		
10-18	8-12	III	2-3				80		

Abbreviations: I, all major muscular groups without equipment and with motor and respiratory control; II, major and minor muscular groups with equipment and motor/respiratory control; III, the same, with more speed, bigger lever and more resistance equipment. HRmax, age-predicted maximal heart rate equation [(220–age)-10)]

Statistical Analysis

In a preliminary analysis, all data were subject to descriptive, comparisons and correlation analysis using Statistical Package for the Social Sciences version 20.0 (SPSS Inc., Chicago, IL, USA). Comparisons between baseline and the end of 13 weeks were performed using paired samples T test to determine the health state, disability, motivation to HT and knees, hips, back, cervical and shoulders pain evolution. Pearson product-moment correlations were used to analyze the associations among forms of HT behavioral regulation and all continuous variables and total assisted HT classes. We used bivariate correlations to analyze the associations among different regulations style and relative autonomy index (RAI)

with percentage mean of 13-week attendance and for each month and to investigated the possible association between attendance for Ht and all continuous variables and correlation between the participants age and all outcomes. Finally independent samples T test was used to analyze the gender association with regulation style to HT. The conceptual model (fig.2) shows how autonomous regulation to HT can be apportioned into its effect on pain, function and quality of life.

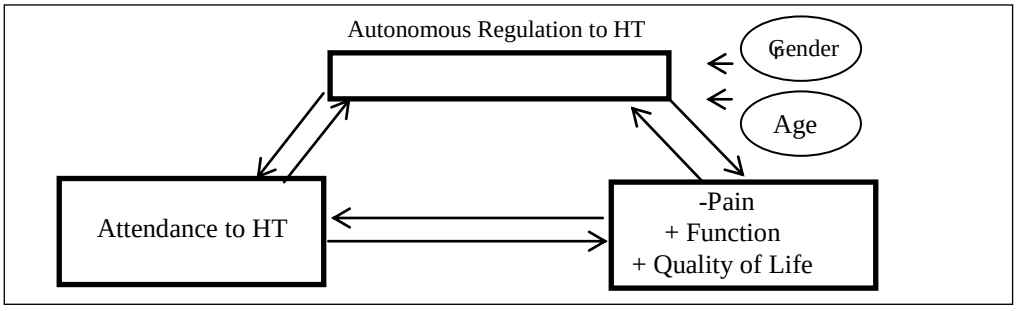


Figure 2. - Conceptual model of the study with the represented paths

RESULTS

Patients

Descriptive characteristics of the participants are shown in Table 2 .Participants were 124 adults, with a mean age 60, 51 (± 10,15y), enrolled in two swimming pools in the municipality of Palmela, Portugal. Most of the participants were women (83,1%), 67,74% in menopause. Most participants were retired (60,5%) and 94,35% used nonsteroidal anti-inflammatory as their usual S.O.S. pain-relieving method (n = 117). Most participants performed hydrotherapy between 1 and 10 years (66,1%) and reported having chronic pain for more than 10 years (56,5%).The sample had a BMI mean of 27.83 (± 4.37) at baseline and the number of years practice in hydrotherapy where 5, 49 years (± 4, 73) (table 2). Most participants attended three times per week (62,9%) and 44.3% twice. Participants attended 68% of their aquatic exercise classes over the 13-week study period.

Table 2 - Demographics of participants

Baseline Variable		**Total Sample n = 124**	
Ratio Data		M	SD
Age (years)		60,51	10,15
BMI(kg/m2)		27,83	4,37
Nº HT Years		5,49	4,73
Frequency Data		N	%
Gender	Female	103	83,1
	Male	21	16,9
Ocupation	Retired	75	60,5
	Active	49	39,5
Menopause	No	40	32,3
	Yes	84	67,74
Menopause Reason	Natural cause	51	41,1
	Hysterectomy	33	26,6
NSAIDs.	Always	7	5,6
	S.O.S.	117	94,35
Antidepressants/	No	81	65,3
anxiolytics	Yes	43	34,7
Hipertension	No	60	48,4
	Yes	64	51,6
Other Medication	No	26	21,0
	Yes	98	79
Ht Years	< 1 year	24	19,4
	1 – 10 years	82	66,1
	> 10 years	18	14,5
Chronic pain Years	< 1 year	3	2,4
	1 – 10 years	51	41,1
	> 10 years	70	56,5
Pathologies	C.L.B.P.	112	90,3
	O.A.	43	34,7
	F.M.	6	4,8
	Other Pain	79	63,7

Note: BMI – Body Mass Index; NSAIDs - Nonsteroidal anti-inflammatory

To analyze the difference in assessment of health state, disability, motivation to HT and pain over time, we used a paired samples test, with the following results of Table 3.

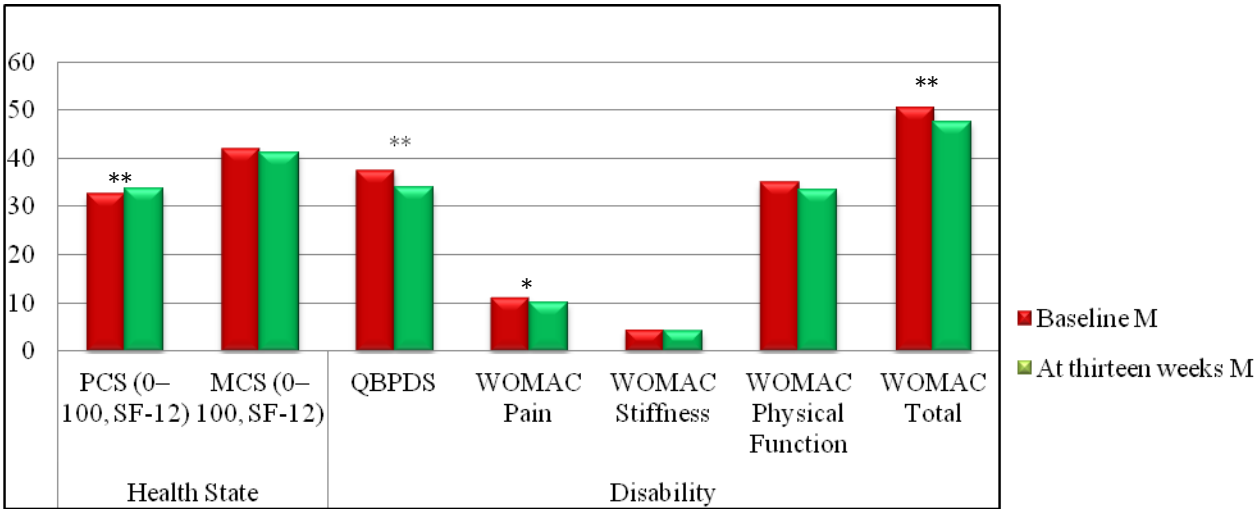
Table 3. - Paired t-Test comparison between Pre-Treatment and Post-Treatment SF_12 (PHS, MHS), QBPDS, WOMAC, Motivation to HT and Pain Scores (*n* = 124)

	Variables		Baseline		At thirteen weeks		
			M	SD	M	SD	*P*
Health State	PCS (0–100, SF-12)	*n* = 124	32,54	6,34	33,75	5,44	<,001
	MCS (0–100, SF-12)		41,81	12,07	41,16	11,22	0,406
Disability	QBPDS	*n* = 112	37,47	15,23	33,94	13,77	<,001
	WOMAC Pain	*n* = 43	11,07	2,90	10,14	2,80	<0,05
	WOMAC Stiffness		4,40	1,66	4,07	1,44	0,119
	WOMAC Physical Function		34,93	9,95	33,44	7,90	0,190
	WOMAC Total		50,40	13,31	47,65	10,57	<,001
Motivation to HT	Amotivation	*n* = 124	0,85	2,12	0,84	2,03	0,942
	External Motivation		1,64	2,84	1,32	2,59	0,245
	Introjected Motivation		3,28	3,16	3,45	3,16	0,507
	Identified Motivation		12,48	2,41	12,80	2,13	0,113
	Intrinsic Motivation		12,28	2,37	12,67	2,38	0,121
Pain	Knees	*n* = 37	6,19	1,78	4,97	2,10	<,001
	Hips	*n* = 14	6,30	2,02	5,00	2,57	<0,05
	Lombar	*n* = 112	5,10	2,48	4,00	2,20	<0,01
	Shoulders	*n* = 31	6,00	1,98	4,30	2,30	<0,01
	Cervical	*n* = 34	5,35	1,98	4,62	1,86	<0,01

Note: PCS and MCS – physical and mental components from questionnaire SF-12; WOMAC - Western Ontario and McMaster Universities; QBPDS - Quebec Back Pain Disability Scale.

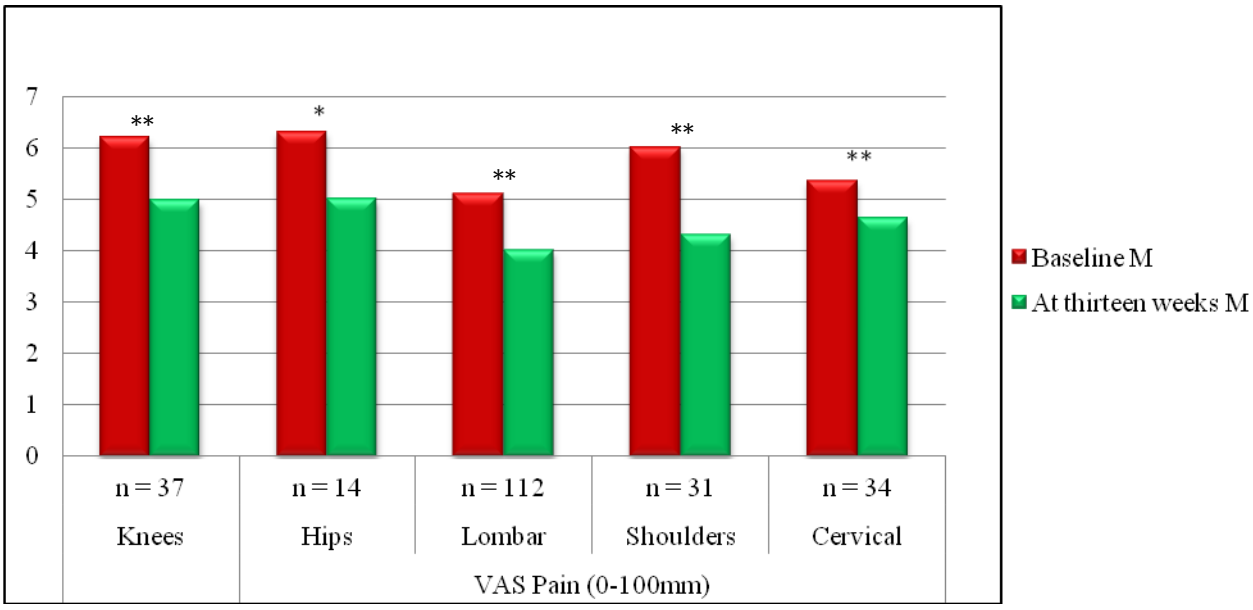
There was a significant improvement in physical component and a decrease in disability for patients with lombar pain (QBPDS) and OA (WOMAC total) (fig. 3) , in particular at the level of OA pain at 13 week compared to the baseline scores ($p < 0,01$) and significant reduction over time in all pain scores (all $p < .013$) (fig. 4). We have also verified a significant increase in the physical component mean and there was no significant change ($p > 0,05$) in other post-intervention scores.

Figure 3.- Changes of health status and disability, pre-treatment and post-treatment, measured by SF_12 (PHS, MHS), QBPDS, WOMAC



Note: PCS and MCS – physical and mental components from questionnaire SF-12; WOMAC- - Western Ontario and McMaster Universities; QBPDS - Quebec Back Pain Disability Scale.
* *p*<.0,05; ***p*<.0,01

Figure 4. Changes of pain, pre-treatment and post-treatment, measured by VAS 100 mm



Note: VAS - 100-mm visual analogue scale for pain. * *p*<.0,05; ***p*<.0,01

Pearson correlations were used to analyze the associations among behavioral regulation and all continuous variables and total assisted HT classes (Tables 4 and 5). First,

we carried out the difference between the final and baseline in all variables, in order to investigate the correlation among the various evolutions of the respective variables, then we have created variables for each outcome that represented the change between the initial and final score.

Table 4. - Bivariate correlations among the motivation and health status and disability (variables represent change scores)

Variable:	SF-12 PCS	SF-12 MCS	QBPDS	WOMAC Pain	WOMAC Stiffness	WOMAC Physical Function	WOMAC Total
Amotivation	,074	-,239**	,047	,136	,248	,186	,210
External Regulation	-,111	-,129	,016	,009	-,028	,217	,165
Introjected Regulation	-,164	,008	,074	,211	,047	,161	,179
Identified Regulation	-,055	,168	-,221*	,134	-,142	-,050	-,028
Intrinsic Regulation	,045	,124	-,060	-,176	-,023	-,263	-,247
RAI	,042	,255*	-,129	-,149	-,148	-,354*	-,327*

*Note:*RAI – Relative Autonomy Index*; *p*<.05; **p*<.01

Table 5. - Bivariate correlations among the motivation and pain evolution (variables represent change scores)

Variable:	VAS knees	VAS hips	VAS lombar	VAS shoulders	VAS cervical	Total Assisted HT Classes
Amotivation	-,430**	-,736**	-,035	-,099	-,071	,114
External Regulation	-,445**	-,688**	-,071	,104	-,300	,166
Introjected Regulation	-,056	-,566*	-,017	,269	-,033	,074
Identified Regulation	-,096	-,219	,062	-,142	-,069	-,004
Intrinsic Regulation	,057	,250	-,095	-,142	-,014	,199*
RAI	,332*	,743**	,011	-,205	,097	,191*

*Note:*RAI – Relative Autonomy Index*; *p*<.05; **p*<.01

Tables 4 and 5 shows fourteen pairs of variables with a significant correlation. The strongest negative correlation was between amotivation and hips pain, an indication that the subjects with O.A. which have increased the most in amotivation were the ones that decreased the reported hip pain (r(14)=-.74, p<.003) and knee pain (r(37)= -.43, p<.008). Also, people who showed a decrease in amotivation reported higher gains in perceived mental health (r (124)= -.24, p<.007). An improvement in external regulation was associated with a reduced knees pain (r(37)=-.45, p<.007) and with a reduced hips pain (r(14)=-.69, p<.007) in patients with O.A., and an increase in introjected regulation was associated with reductions in hips pain (r(14)=-.57, p< .035). However increases of identified regulation levels were associated with reduced low back disability (QBPDS) (r(112)=-.22, p<.019) and an improvement of intrinsic motivation was associated with an increased attendance to the HT (r(124)=-.20, p<.027). There was a positive association between RAI and MCS which means the participants that have increased the most in relative autonomy index were the ones that improved levels of perceived mental health (r(124)=.26,p<.004). RAI was inversely related to the WOMAC physical function (r (43) = - 0.35, p <0.020) and total WOMAC (r (43) = - 0.33, p <0.032), which means that O.A. participants that increased their autonomous regulation, presented improvements in function. However those whose autonomous regulation was decreasing, presented a decrease in knee pain (r (37) = 0.33, p <0.045) and hip pain (r (14) = 0.74, p <0.002).

Analyzing the associations between different regulatory styles and relative autonomy index (RAI), with mean total attendance and for each month, it was found that individuals who experienced an improvement of RAI also had an increase in the total percentage mean attendance (r (124) = 22, p <015), in April (r (124) = 22, p <016) and also in May (r (124) = 22, p <017), but not in June, so participants who improved their autonomy are those who increased their attendance. Analyzing the possible association between attendance for Ht and all continuous variables, there was only a positive correlation between the attendance in June and PCS scores (r(124)=.20, p<.025), this indicates that the subjects that have increased the most in attendence in June, were those who reported improved the reported PCS. There was no significant correlation between the participant's age and all outcomes, however we have founded positive correlation between age and attendance: the older participants were significantly more assiduous (r (124) =, 20, p <, 028).

We used independent samples T test to analyze the gender association with the changes in regulatory style to HT. Female participants registered a marginally significant increase in amotivation when compared to men (t(122)=2,55, p=.072).

Discussion

This study was conducted to analyse the association between motivation and chronic pain, during a three months HT program for treatment of chronic pain in adults and elderly.

The study presented 5 main results: First, a 13 weeks HT program seems to improve function and quality of life and to decrease pain at all levels. This was demonstrated in others studies who showed that aquatic exercise improved function and quality of life and reduced pain in chronic pain patients and exercise does improve function, especially for those with severe disease (Brophy et al. 2012; Cadmus et al, 2010; Cuesta-Vargas, Garcia-Romero, De diego-Acosta, Gonzalez-Sanchez & Labajos-Manzanares, 2009; Cuesta-Vargas et al., 2012; Hurkmans et al., 2010; Lim, Tchai & Jang, 2010Pisters et al., 2010a; Tse, Vong, & Tang, 2012). In our study the health status, measured by Sf-12, always remained at moderate to high scores in baseline and in the end of the 13 weeks. This may have happened because the majority of these users were already attending hydrotherapy for some years (most between 1 and 10 years) perceiving a better state of health and consequently a better quality of life. Nevertheless there was a significant increase in physical component. In addition to a significant decrease in levels of pain, disability levels also decreased significantly during the intervention, both for participants with chronic low back pain or for those with OA, which indicates improvement of the function for these participants at the end of the study.

Second, regulatory style seems to be correlated with pain, function and quality of life. This study showed that participants with O.A. increased their amotivation, external and introjected regulation for HT (decreasing the RAI), as the knees and hips pain decreases. Our study is similar from other studies which have found that people with more chronic pain (and osteoarthritis) were more motivated (Damush, Perkins, Mikesky, Robert & O'Dea., 2005). In this case, it is probable that patients with less pain become more amotivated for Ht than those who have more pain, however this was not observed in participants with chronic low back

pain and it was found throughout the study, in addition to a significant reduction in pain, an intrinsic and identified motivation levels increase (although not significant). Both subjects with O.A. and CLBP that have improved motivation, were the ones that increased the reported physical function. It was also demonstrated, that those who presented a decreased at amotivation (better autonomous motivation) increased their perceptive mental health. This is consistent with other findings and Self Determination Theory, that suggest people with high intrinsic motivation had the greatest benefit to activity and function as much as exercising itself and gained some beneficial effects in improving their health status (Brophy et al. 2012). Indeed our study demonstrated that people with O.A. and CLBP, who had more autonomous regulation, presented higher function and lower disability.

Third, the HT regulatory style seems to be correlated with HT attendance. Higher RAI and intrinsic motivation are associated with more Ht attendence, so it seems that participants with greater relative autonomy are the most assiduous. Therefore, although the regulatory style may not predict exercise maintenance, it seems logical that assiduous patients, who experience less pain over the course of time, will be able to better meet the demands of daily living, consequently, they will adapt a more physically active lifestyle and will probably not experience this as being important to maintain adherence to Ht (Hurkmans et al., 2010),. Although there are few studies on the relation between regulatory style and HT attendance in patients with chronic pain, our results are comparable with studies in patients with rheumatic arthritis and ankylosing spondylitis (Hurkmans et al., 2010; Pisters et al, 2010a; Brophy et al., 2012). So, if more autonomous regulation was associated with more physical activity and lower disease activity, improving motivation is in itself important to improve physical activity, a goal by itself (Hurkmans et al., 2010; Tse et al., 2012).

Fourth, HT attendance seems to be related with higher levels of physical health status. In the last month of the study, the ones who increased more attendance showed an improved in physical health scores. Some studies showed that adherence and higher level of physical activity were significantly associated with younger age females and better outcomes of pain and people with more disability were found to exercise more frequently than those with less disability (Brophy et al., 2012; Falkenbach et al., 2003; Hurkmans, 2010; Pisters et al, 2010b). Others previous studies, among patients with arthritis, have showed comparable results: age have been found to be determinants of physical activity levels but in one of these studies it was found that males rather than females were associated with higher levels of

physical activity (Abell, Hootman, Zack, Moriarty & Helmick, 2005; Eurenius & Stenstrom, 2005; Eurenius, Brodin, Lindblad & Opava, 2007; Fontaine, Heo & Bathon, 2004). In our study we did not found these correlations on pain and disability neither between genders, in contrast we discovered that the older participants increased significantly their attendance than younger. A possible explanation for this could be they have more time or feel they need to be more assiduous often to get more results on pain, function and/or quality of life.

And finally, our fifth point: with respect to other determinants of physical activity, the regulatory style to HT does seem to be directly related with gender but not with age; indeed, the female participants showed greater increases in amotivation compared to males. It is generally agreeable that males tend to be more likely to have greater exercise-related opportunities and resources and possess stronger motivations to exercise than females (Symons Downs, Graham, Yang, Bargainier, and Vasil, 2006). Further, Brickell, Chatzisarantis and Pretty's (2006) study reported that males scored significantly higher than females on the measures of exercise intention. Lastly other study (Othman Yap & Wee, 2011) also concluded that male samples tended to have a higher score of both instrumental and affective attitude towards exercising as well as exercise intention compared to their female counterparts.

Other findings were found; most HT participants suffered from moderate pain with one or multiple pain locations and the most common chronic pain location was lombar, consistent with results of previous studies (Kean et al., 2008; Koes, Van Tulder & Lin, 2010; Tsai et al., 2010; Tse et al. 2012).

Limitations

This study had some limitations. The first one is the design. Indeed we could not conclude that the improvements are directly related to the Ht program, because we had no control group to compare with.

Most outcome measures were self-reported and therefore the levels of pain function and quality of life may not always be accurate. On the other hand, a self-report questionnaire has the advantage that it is a simple method to evaluate these outcomes. However studies like

this could use a combination of methods such as a questionnaire combined with diaries, interviewing and objective evaluation in order to obtain a more accurate assessment.

We know that on the onset of the disease, patients experience in general a more unstable disease course with flares of disease activity and pain. Like in others studies (Brophy et al, 2012) the mean duration of the disease for most of our participants (56,5%) was more than ten years, so most conclusions are limited to patients with an established chronic pain disease and is unknown to what extent the disease course and the patient's adjustment influence regulatory style. Probably different results could be found if the sample had started the program at a first time (66% participated in HT from 1 to 10 years).

Different physiotherapists giving HT may have influenced the motivational dynamics of users, although they had the same background and had been a senior physiotherapist supervising some sessions. The study was conducted in the last three months of the season, just before the holiday month (pool closed), thus this may have influenced the attendance results, indeed there was a decrease, especially in the last month (July).

Participants attended a theoretical and practice session "Chronic pain control and exercises", that aimed to explain what chronic pain is, strategies to cope and control chronic pain, exercise contribution for pain relief and training home exercises, however we did not measure the session effects in attendance or motivation to HT, neither the results on pain control strategies, which would have been important to understand the session influences in these outcomes. Having performed the meeting in the last month season may have influenced some results, particularly attendance levels and regulation style. Study was conducted with users with different pain locations and origins (lumbar, knees, hips, cervical and shoulders,) and in various stages (acute, sub-acute or chronic), this may have influenced the study overall results.

Conclusion

The results of this study suggests that the most autonomous motivations are associated with an increased HT attendance and better function and quality of life, and the most controlled motivations are associated with pain decreases, so it seems that both attendance and motivational orientation to HT have a significant effect on quality of life and

pain is the main external regulator for HT of participants with O.A.. Knowing that the motivation to exercise influences its maintenance, motivational strategies should be a part of the training of healthcare providers working in chronic pain intervention programs which use exercise as a therapeutic instrument. These motivational strategies should be developed with the objective to transforms external forms of motivation for HT guided by pain in autonomous motivation for HT, directed by pleasure, interest, challenge, and internalization of the importance of the HT.

Future directions

Users with chronic pain, have more function and quality of life after performing 13 weeks of a structured exercise program, in this case aquatic exercise therapy (HT), as demonstrated in this and other studies RCT. However it is important to realize more RCT studies aiming to understand which is the most appropriate exercise program to each pathology and follow-up research to know the long-term HT effectiveness. More studies (preferential RCT studies) have to be done to investigate the regulation style influence on Ht attendance, pain and disability in a specifically pathology and stage. Our findings suggest that in future research, the role of autonomy regulation with respect to the physical activity behavior of patients should be evaluated in the context of a specific physical activity intervention, and include relevant health professionals such as physical therapists and exercise specialists as well.

The results of the current study also show that adherence declines over time. To improve the long-term motivation and adherence to HT, future research should focus on how exercise behavior can be stimulated and maintained in the long term. Furthermore, potential predictors of adherence within and after the treatment period should be explored so that physical therapists know which types of patients are at risk for nonadherence. Recently, it was demonstrated that the integration of operant behavioral graded activity principles, motivational interview and motivational sessions (and to cope and control chronic pain) results in better motivation to exercise, better adherence and a more physically active lifestyle (Pisters et al., 2010b). However, more follow-up research is needed and should prospectively examine the relationship between motivation to exercise and aquatic exercise attendance as individuals with chronic pain progress from initiation to adherence. Information will then be obtained on whether the relationships observed in the current study are stable or dynamic over

time. The influence of additional individual-level correlates, such as the actual number of exercise sessions that individuals set goals for attending, efficacy to cope with daily negative thoughts, and exercise enjoyment, and environmental- level correlates, such as exercise group cohesion, on exercise should be examined. Understanding the full scope of correlates would aid in the design of interventions that target the initiation of and adherence to exercise in chronic pain individuals. Finally, future research should examine motivation to exercise correlates to age and gender in chronic pain context, to understand each age and gender specificity and thus be more effective in our intervention as health professionals.

This type of study, although rare in aquatic exercise and pain context, is essential to understand the motivation influences on exercise, how motivation changes over time and how this influences attendance. With this knowledge, we may establish future strategies to positively influence patients' motivation to exercise, maintaining adherence and get better results in pain, function and quality of life.

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CONCLUSÃO GERAL

Este estudo teve um objectivo duplo, por um lado investigar se um programa estruturado de HT teria efeito na DC, função e qualidade de vida e em segundo, analisar a relação entre os vários tipos de motivação para a HT e a dor, função e qualidade de vida e as suas alterações ao longo de treze semanas. As hipóteses de estudo foram parcialmente comprovadas e semelhantes a outros estudos, uma vez que um programa estruturado de HT, parece ser eficaz na redução da dor, melhoria da função e qualidade de vida e a assiduidade, tal como a orientação motivacional para HT, tem um efeito significativo na dor, função e qualidade de vida (Hall et al., 2008, Teixeira et al., 2012). Verificando-se que uma regulamentação mais autónoma para HT está associada a uma melhoria na função e qualidade de vida, contudo não está associada a níveis mais baixos de dor, como se previa inicialmente. Na realidade a dor é apresentada como um dos principais factores externos para a regulação comportamental para a HT.

Tendo como racional teórico a TAD, esta permitiu-nos perceber os resultados deste estudo. Tal como já demonstrado em vários estudos, uma melhoria da motivação intrínseca, leva a um aumento do exercício (neste caso da HT) e por conseguinte a uma melhoria da função e qualidade de vida (Teixeira et al., 2012). Contudo a maioria dos nossos participantes teve como principal "motor" de motivação (extrínseca) a dor, talvez por esta razão, aqueles em que a dor foi diminuindo, acabaram por ficar mais amotivados para a hidroterapia. Também as mulheres apresentaram ao longo do estudo uma tendência, maior que os homens, para a amotivação, o que vai ao encontro de certos estudos que indicam que as mulheres têm menos tendência a praticarem exercício e manterem-se e assíduas (Baptista et al., 2012; Rendall, C., 2013). Contudo em mulheres com DC outros estudos mostram que as mulheres têm tendência a uma melhor regulação autónoma para o exercício e por isso a praticar mais exercício que os homens (Hurkmans et al., 2010).

Em suma, a nossa pesquisa mostrou que, no contexto da saúde e neste caso da DC, os nossos resultados foram semelhantes aos encontrados noutros estudos, nomeadamente, um programa de exercício aquático terapêutico (HT) parece ter efeitos positivos na diminuição da dor, melhoria da função e da qualidade de vida, o principal regulador externo para a HT é a

DC, a assiduidade está directamente associada à idade e a regulações mais autónomas e tende a diminuir ao longo do tempo, talvez porque a dor diminui ao longo do programa. Por fim, as regulações mais autónomas tiveram uma associação positiva com a função e qualidade de vida, sendo que o género feminino revelou mais tendencia à amotivação ao longo do estudo, que os homens.

Apesar do papel do profissional de saúde, que acompanha o individuo com dor crónica, ser também um papel de orientador e educador, em que o utente deverá ter um papel ativo no controlo da sua dor, o Fisioterapeuta deverá ter também um papel cada vez mais ativo na mudança de comportamentos para o exercício. Estratégias motivacionais devem ser aprendidas, treinadas e executadas com os seus doentes, tal como outros estudos indicam (Pisters et al., 2010b; Tse et. al., 2012).

Assim, sendo um estudo "pioneiro" na área da HT e DC, os seus resultados fornecem suporte para as proposições da TAD e corroboram para melhorar a nossa compreensão dos processos motivacionais relacionados com o exercício em adultos e idosos com DC.

As limitações e sugestões para uma investigação mais aprofundada de ambos os estudos foram apresentados nos respectivos capítulos. No entanto, não podemos deixar de sugerir que seria interessante continuar a investigar nesta área, com investigação que só se focasse numa determinada condição ou patologia base (por exp: lombalgia crónica, cervicalgia crónica, osteoartrose dos joelhos ou ancas, etc). Por outro lado, importa cada vez mais efectuarem-se estudos com *design* e métodos mais apurados, do tipo RCT, que possam demonstrar com mais exactidão os efeitos de programas de exercício terapêutico e averiguar os resultados ao longo do tempo.

Esta dissertação foi uma importante etapa de aprendizagem na vida profissional da autora. Para além de todos os conhecimentos adquiridos, teve a oportunidade de mostrar (parcialmente) a evidência da sua prática, para que assim tenha a possibilidade de a modificar, baseada, por um lado na melhor evidência encontrada e por outro nas descobertas efectuadas através desta investigação. Na certeza que irá promover uma melhor qualidade da prestação dos cuidados de saúde aos seus utentes e na esperança que este estudo possa ser um contributo para a investigação nas áreas da saúde e do exercício.

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APÊNDICES

Apêndice I

Carta de autorização enviada à "Palmela Desporto, E.M." para realização do estudo

No dia 20 de Março de 2013 às 02:49, Helena Murta <helena.murta0@gmail.com> escreveu:

Gostaria de solicitar autorização para realizar um estudo de investigação nas piscinas de Palmela e Pinhal Novo a todos os utentes que estão inscritos nas classes de Hidroterapia Adultos. Este estudo é efetuado no âmbito da minha dissertação de "Mestrado em Exercício e Bem Estar", que tem como tema: "Análise da dinâmica motivacional dos utentes, com dor crónica, que participam num programa de Hidroterapia- Fisioterapia Aquática" sob a orientação do Professor Doutor António Palmeira da Universidade Lusófona de Lisboa

Os principais objetivos do estudo são:
1- Perceber o que motiva as pessoas a aderirem ao programa de Hidroterapia e a manterem ou não essa motivação e
2 - Se há efeitos na diminuição da dor, melhoria da funcionalidade e da qualidade de vida, ao longo de três meses de aplicação de um programa de Hidroterapia, em utentes adultos e idosos, de ambos os sexos, com dor crónica, participantes nas classes de hidroterapia das Piscinas Municipais de Palmela e Pinhal Novo

O entendimento desta dinâmica motivacional, poderá ajudar-nos a perceber não só o tipo de motivação destas populações, como de que forma poderemos intervir na alteração de comportamentos, que provocará os efeitos pretendidos benéficos para a comunidade (com diminuição das suas queixas álgicas, melhoria da qualidade de vida e funcionalidade)

Neste estudo serão:
- Entregues consentimentos informados a todos os utentes das hidroterapias de grupo
- Disponibilizados num 1º momento questionários para todas as fisioterapeutas darem aos seus utentes (*WOMAC/SF36- versao curta*-para avaliação da qualidade de vida e função e analise motivacional-*breq-2*)
- Serão entregues tabelas a ambas as secretarias, onde as administrativas riscarão se a pessoa já entregou) e onde marcarão uma avaliação comigo para avaliação da intensidade da dor(EVA) e reavaliação de alguns dados mais antigos
- Após todos os utentes terem preenchido os questionários e entregue os mesmos, voltará a proceder-se da mesma forma, passados três meses de intervenção em hidroterapia (final de Junho/inicio de Agosto)

Também será necessário que a partir do 1º momento, ambas as piscinas me disponibilizem as **assiduidades mensais dos utentes de todas as HIDROTERAPIAS DE GRUPO e respectivas listagens (meses de Abril, Maio e Junho)**
Gostaria também de saber se será possível realizar um workshop "reciclagem" aos Fisioterapeutas destas piscinas num dos próximos sábados (em Palmela e/ou Pinhal Novo)(documentos em anexo)

--
Helena Murta
Fisioterapeuta
+351 961 625 536

No dia 22 de Março de 2013 às 18:51, Eduardo Pereira - Palmela Desporto <eduardo.pereira@palmeladesporto.pt> escreveu:

Boa tarde Lena

Autorizada a realização do estudo conforme solicitado.

Bom trabalho!

Eduardo Borges Pereira - Presidente
Piscina Municipal de Pinhal Novo
212 389 900
Palmela Desporto, EEM
www.palmeladesporto.pt
www.facebook.com/palmeladesporto

Apêndice II – Consentimentos Informados da 1ª e 2ª fase do estudo

Consentimento informado para utentes – 1ª Fase

Estudo de Investigação

Exmª/º utente,

Iremos realizar um estudo de investigação nas piscinas de Palmela e Pinhal Novo a todos os utentes que estão inscritos nas classes de Hidroterapia Adultos. O investigador será a Fisioterapeuta Helena Murta, sob orientação do Professor Doutor António Palmeira da Universidade Lusófona de Lisboa, no âmbito da dissertação de "Mestrado em Exercício e Bem Estar", que tem como tema: "Análise da dinâmica motivacional dos utentes, com dor crónica, que participam num programa de Hidroterapia- Fisioterapia Aquática"

Os principais objetivos do estudo são:
1- Perceber o que motiva as pessoas a aderirem ao programa de Hidroterapia e a manterem ou não essa motivação e
2 - Se há efeitos na diminuição da dor, melhoria da funcionalidade e da qualidade de vida, ao longo de três meses de aplicação de um programa de Hidroterapia, em utentes dos 30 aos 80 anos de ambos os sexos, com dor crónica, participantes nas classes de hidroterapia das Piscinas Municipais de Palmela e Pinhal Novo

O entendimento desta dinâmica motivacional, poderá ajudar-nos a perceber não só o tipo de motivação destas populações, como de que forma poderemos intervir na alteração de comportamentos, que provocará os efeitos pretendidos benéficos para a comunidade (com diminuição das suas queixas álgicas, melhoria da qualidade de vida e funcionalidade)

Neste estudo serão disponibilizados os questionários em anexo, que poderá preencher, se possível, sem ajuda de terceiros. Entregue-os depois na secretaria da sua piscina.

Marcaremos também consigo uma pequena avaliação para retirar outros dados importantes para esta investigação.

Se concorda em colaborar neste estudo por favor assine esta folha, se não quer participar neste estudo, devolva simplesmente estas folhas em branco

CONSENTIMENTO INFORMADO

Reconheço que os procedimentos de investigação foram explicados e que todas as minhas questões foram esclarecidas de forma satisfatória. Compreendo igualmente que a participação no estudo não acarreta qualquer tipo de vantagens e/ou desvantagens potenciais.

Compreendo que tenho o direito de colocar agora e durante o desenvolvimento do estudo qualquer questão relacionada com o mesmo. Asseguraram-me que todas as informações que me dizem respeito serão guardadas de forma confidencial e que nenhuma informação será publicada ou comunicada, incluindo a minha identidade, sem a minha permissão, de forma a salvaguardar o meu anonimato.

Compreendo que sou livre de me retirar do estudo a qualquer momento.

Pelo presente documento, eu consinto a minha participação no estudo.

Nome:

Data: _____/ ____/ 2013

POR FAVOR, SE DECIDIU PARTICIPAR NESTE ESTUDO ENTREGUE OS QUESTIONÁRIOS DENTRO DOS PRÒXIMOS 3 DIAS E QUANDO OS ENTREGAR, MARQUE LOGO UMA CONSULTA. Obrigada!!!

Consentimento informado para utentes – 2ª Fase

Estudo de Investigação

Exmª/º utente:_____

Obrigada por ter participado na 1ª fase do estudo: "Análise da dinâmica motivacional dos utentes, com dor crónica, que participam num programa de Hidroterapia- Fisioterapia Aquática"

Ao fim de três meses de Hidroterapia, gostaríamos de saber novamente como se sente, por isso agradecemos que preencha pela 2ª e última vez os mesmos questionários.

O preenchimento e entrega (no máximo até dia 4 de Julho) destes questionários é imprescindivel para a conclusão do estudo e também para ficarmos a compreender o que os utentes das classes de Hidroterapia sentem. A fisioterapeuta irá também solicitar que assinale na escala "EVA" a intensidade da sua dor, tal como fez na 1ª fase.

O seu nome nunca aparecerá nos resultados do estudo., pois o que nos interessa é a opinião de todos. Assim torna-se importante que TODOS os que participaram na 1ª fase, participem agora também!

Assinatura:_____

Data: _____/ ____/ 2013

POR FAVOR, SE DECIDIU PARTICIPAR NESTE ESTUDO ENTREGUE OS QUESTIONÁRIOS DENTRO DOS PRÒXIMOS 3 DIAS Ou, no máximo, ate dia 4 de Julho de 2013.

Obrigada

Helena Murta _____

Apêndice III

Quadro 1 - Tabela de assiduidade / registo de presenças dos utentes nas diferentes fases do programa de exercícios

Mês …… 2013 Hidroterapia :……Fisioterapeuta:…….....

Colocar: S (sim) ou N (não) para saber se a pessoa fez ou não cada parte do programa e se realizou treino aeróbio com medição das frequências cardíacas (apontá-las na folha em anexo)

Aq = aquecimento Sess- Sessão principal Aer- treino aeróbio medido Along- Alongamentos(no final da sessão)

NOME	Dia ……				Dia……				Dia ……				Dia……				Dia……				Dia……			
	Aq	Sess	Along	Aer	Aq	Sess	Along	Aer	Aq	Sess	Along	Aer	Aq	Sess	Along	Aer	Aq	Sess	Along	Aer	Aq	Sess	Along	Aer

Apêndice IV

Documento com descrição de todos os procedimentos para fisioterapeutas e administrativas de ambas as secretarias das piscinas

HIDROTERAPIA – ENTREGA DE QUESTIONARIOS

A partir desta semana e durante 3 meses (até Junho), irei realizar um **estudo de investigação** nas piscinas de Palmela e Pinhal Novo a todos os utentes que estão inscritos nas classes de Hidroterapia Adultos. Este estudo é efetuado no âmbito da minha dissertação de "**Mestrado em Exercício e Bem Estar**", que tem como tema: "Análise da dinâmica motivacional dos utentes, com dor crónica, que participam num programa de Hidroterapia- Fisioterapia Aquática"

1. **– Durante a próxima semana, eu e as Fisioterapeutas iremos entregar consentimentos informados e questionários a todos os utentes das hidroterapias**
2. **– Depois, todos os utentes deverão entregar esses questionários nas secretarias de ambas as piscinas**
3. **– Nos dias 01/04 (15h em Palmela) e 02/04 (9h no pinhal novo) vou deixar tabelas das classes e um tabuleiro (caixa em plástico branco-já deixei no P.Novo) nas secretarias e tirar-vos qualquer dúvida**
4. **- Peço a vossa colaboração para o seguinte:**

- Quando cada utente vos entregar os questionários, vocês devem escrever, no respetivo nome do utente (na tabela), a data em que o utente vos entregou os questionários
- Colocam os respetivos questionários nessa caixa que vos deixei (em plástico branco). A tabela também deverá estar sempre arrumada na caixa (para não se perder)
- Marcam logo com esse utente uma (breve) avaliação* para mim

5. **- Qualquer utente que tenha dificuldade em preencher os questionários ou tenha alguma dúvida, podem telefonar-me na altura (se eu não atender, deixem mensagem) ou o utente depois tira a duvida comigo durante a avaliação***
6. **- Na altura em que o utente vos der os questionários, marcam uma (breve) avaliação* comigo para a quarta feira imediata (palmela-16h) ou quinta (pinhal novo-16.30)**
7. **- Portanto, durante os próximos 3 meses para além das 2 consultas de avaliação que tenho, por semana (em cada piscina), poderei ver mais 6 utentes**

Nota: Esta (breve) avaliação será SÓ para rever a condição geral de saúde do utente e avaliar se tem dor e a sua intensidade

- Após todos os utentes terem preenchido os questionários e entregue os mesmos, voltaremos a proceder da mesma forma, passados três meses (**final de Junho/inicio de Julho**).

IMPORTANTE: Será necessário que me disponibilizem as **Assiduidades mensais dos utentes de todas as HIDROTERAPIAS DE GRUPO e respectivas listagens (dos meses de Abril, Maio e Junho)**

Obrigada pela vossa colaboração! Ela será benéfica não só para o estudo e essencialmente para os utentes!
Lena Murta Março 2013

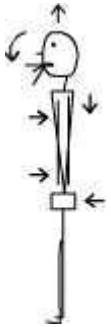
Apêndice V

Programa do "Workshop" de reciclagem para Fisioterapeutas – Programa "Acqua Lusa"

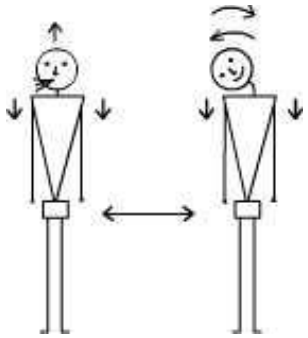
Apêndice VI

Protocolo de exercícios terapêuticos aquáticos – Programa de Hidroterapia "Acqua Lusa" (duas partes): PARTE 1 (Figuras)

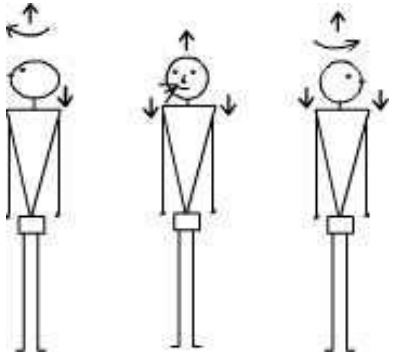
B1 - AQUECIMENTO (10 min.)



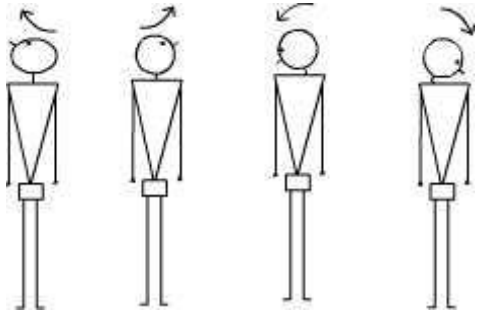
1-Flexão/ Extensão Cervical com controlo motor (CM) LS



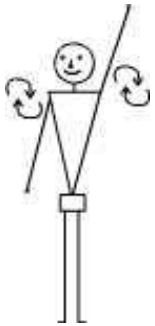
2-Flexão lateral cervical com CM L-S



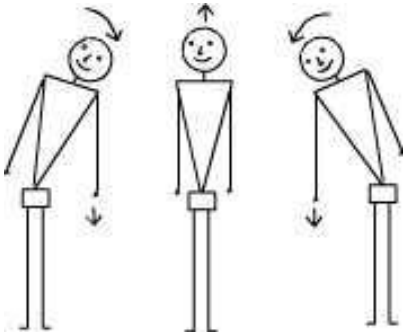
3 - Rotações laterais cervicais



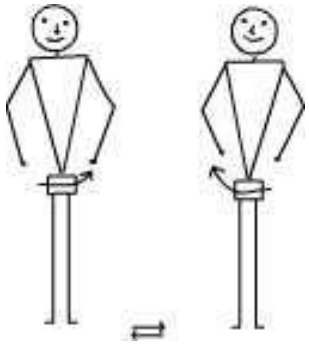
4-Rotações laterais cervicais com flexão/ extensão



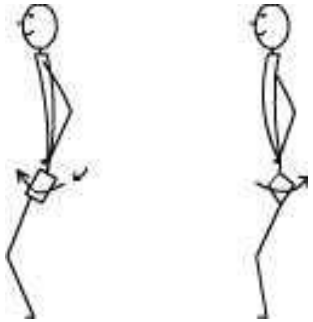
5 - Circundução alternada MMSS



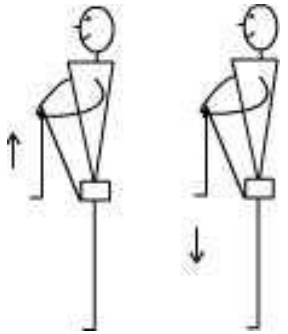
6 - Inclinação Lateral do Tronco



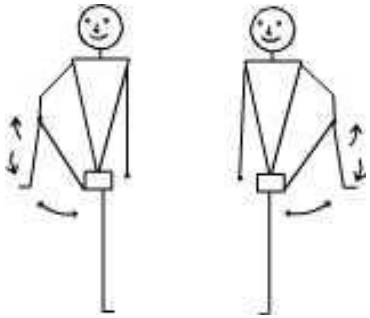
7-Báculas Laterais da bacia



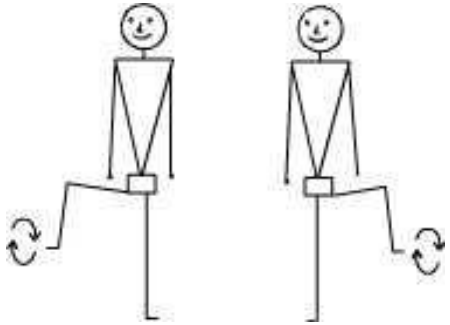
7- Básculas anterior e posterior



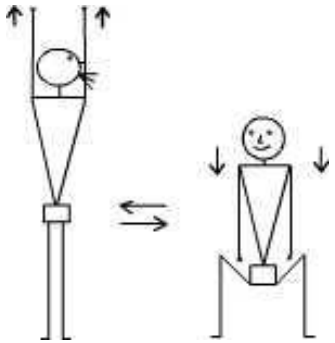
8- Flexão/Extensão MMII e treino de equilibrio em pé



10-Flexão c/rotação ext. MMII + Treino equilíbrio



11- Rotação pés com treino equilíbrio

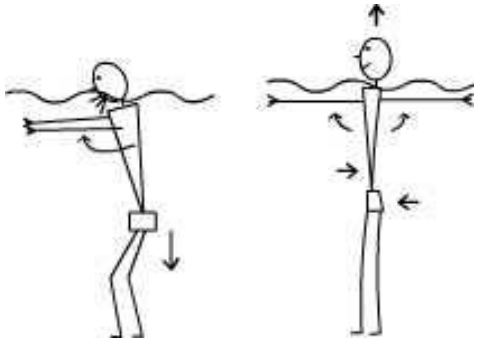


12- Agachamentos

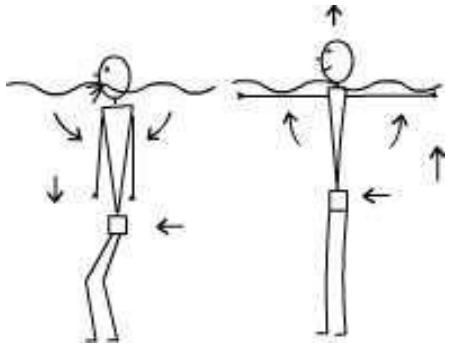
TRANSIÇÃO PARA ÁGUA - *DESCRITO NO PROTOCOLO DE EXERCÍCIOS "ACQUA-LUSA"*

B1 - MARCHA E EQUILIBRIO na água - *DESCRITO NO PROTOCOLO DE EXERCÍCIOS "ACQUA-LUSA"*

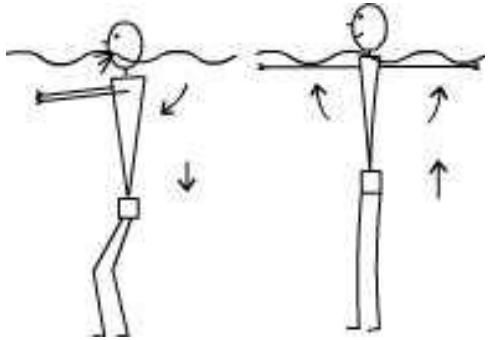
B2 - MOBILIDADE/A.V.D., FORTALECIMENTO e EQUILIBRIO (25-30 min.)



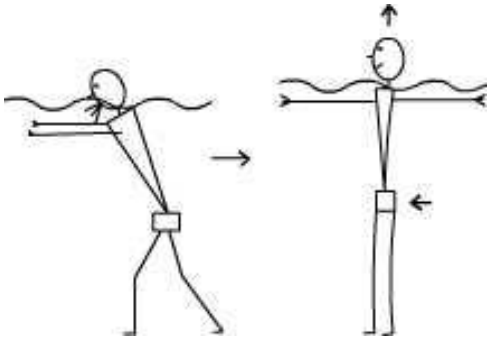
13-Flexão/Extensão dos MMSS com agachamento



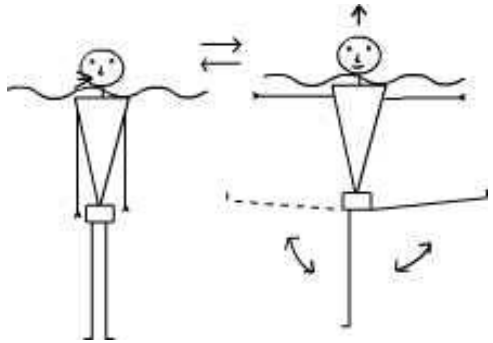
14-Abdução/ Adução MMSS com agachamento



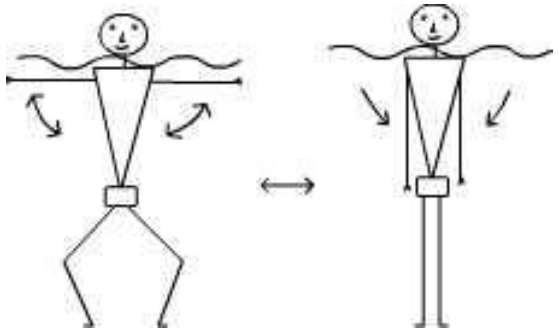
15-Adução/Abdução horizontais com agachamento



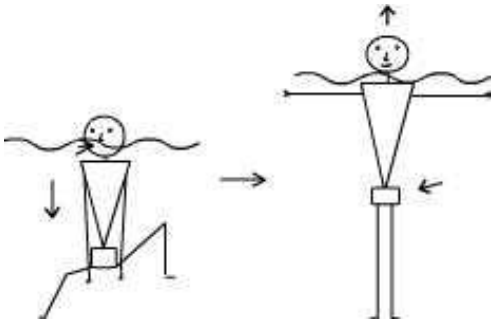
16-Adução/Abdução horizontais com hiperextensão alteranda dos MMII



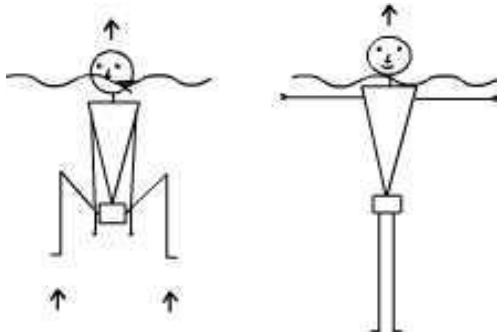
17- Ad/AB dos MMII -



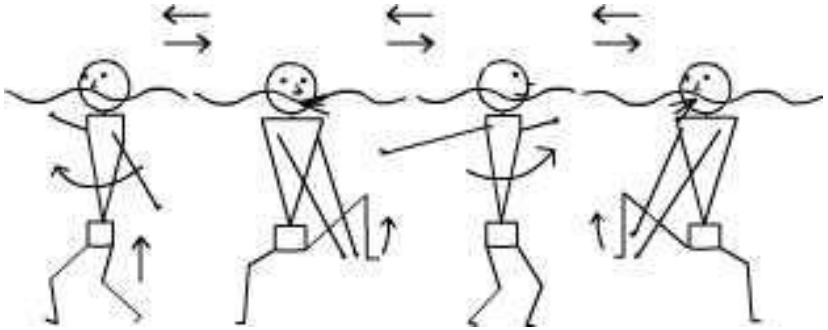
18-AD/ABD dos MMSS com agachamento



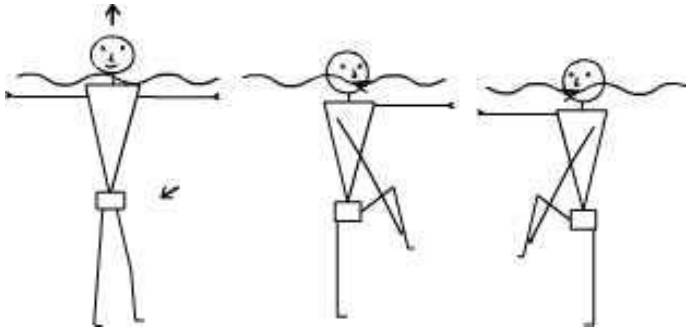
19-Rot Ext MI com agachamento seguida de abd- rot MMSS e CM L-S



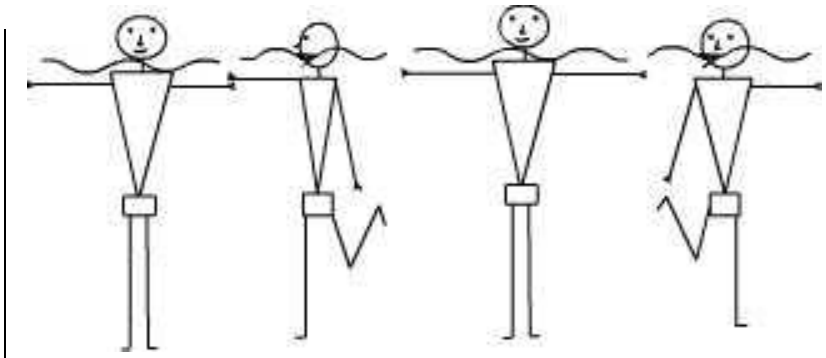
20- "Saltar ao eixo" em flutuação, seguido de extesão global com CM L-S



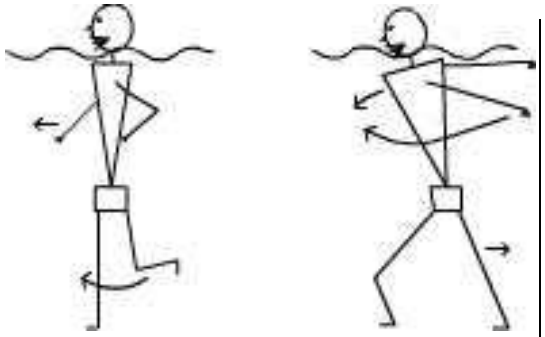
21 - "Calçar a meia" indo-a buscar atrás - Bilateral



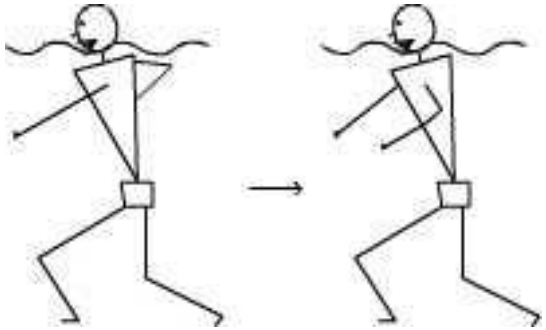
22 - Rot externa MI alternada com mão do MS oposto, ao pé



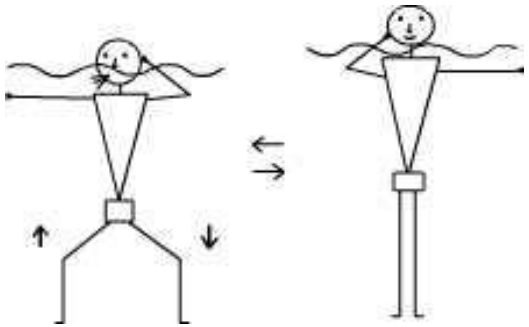
23-Rot int do MI, alternada com mão do MS oposto, ao pé - Pontapé alternado com "remada" do MS oposto



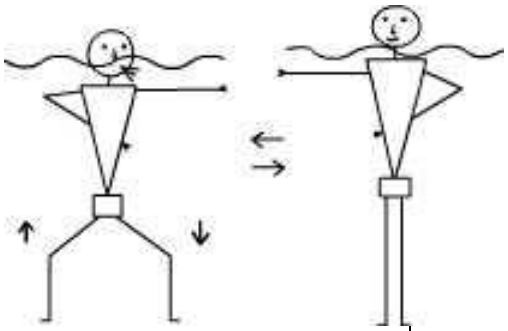
24-Marcha para trás com remada de MMSS



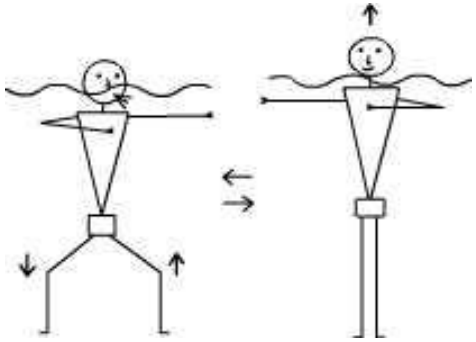
25-"Tesoura" ant-post dos MMSS alternados com MMII



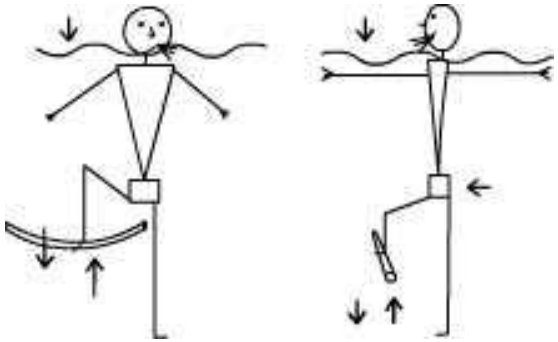
26- Marcha lateral com agachamento e rot externa MMSS



27 - O mesmo, mas com Rot Int dos MMSS

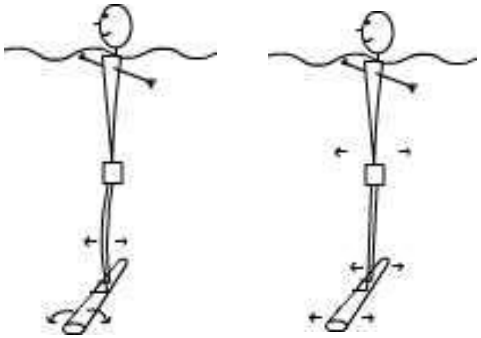


28-Marcha lateral com Flex/Ext dos cotovelos alternados

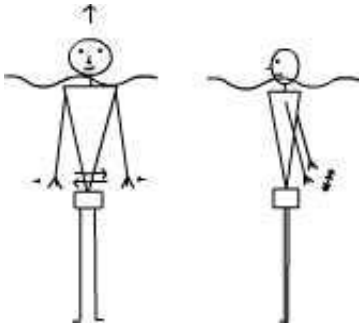


29 -"Empurra esparguete para baixo"- alterna MMII

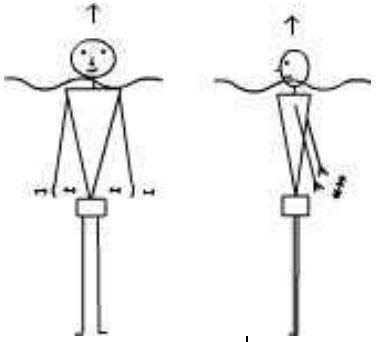
30-"Puxa joelhos ao peito" em flutuação



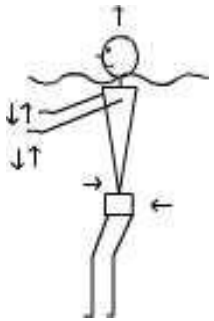
31 - Em pé no "esparguete" rodando-o para frente/trás



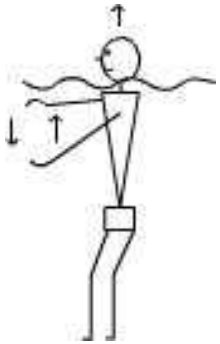
32 - "Corta" água com mãos atras/ Repete com ad/abd dos MMII em flutuação



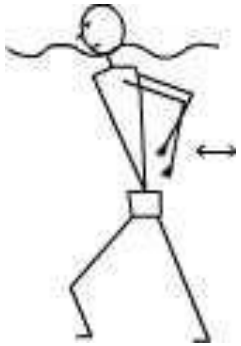
33-Mãos atrás "apertar bola"



34-Pequenos movimentos alternados de Flex/ext dos MMSS (mãos empurram água)



35-O mesmo, mas com movimentos mais amplos



35 -Flex/Ext bilat dos cotovelos com Hiperext do MI

B2 - TREINO AERÓBIO (8-10 min.)
"Deep Water Running" - 2 a 3 vezes por semana - exercício aeróbico - 8 minutos por sessão. Progressão da carga de trabalho de DWR : Inicio: 60% FCM progredindo até 80% FCM ao longo das semanas, variando com as respostas individuais. A profundidade da água varia de 1,60 m (Palmela) até 2,10 m (Pinhal Novo) e é efectuada com cintos de flutação (modelo AQUAJOGGER). A FC é monitorizada por auto palpação do pulso carotídeo (ideal) ou radial e cada Fisioterapeuta regista após os 8 minutos (2´- corrida lenta, 2`- corrida rápida, 2`- lenta, 2` - rápida), supervisionando a técnica, a intensidade e a carga. Em vez de DWR poderá fazer "natação com snorkle" com o estilo adequado à condição.
B3 - "VOLTAR À CALMA" - ARREFECIMENTO / VOLTAR À CALMA / ALONGAMENTOS (5-10 min.) - *DESCRITO NO PROTOCOLO DE EXERCÍCIOS "ACQUA-LUSA"(PARTE 2)*

PARTE 2 (Descrição dos exercícios)

BLOCOS:	FOCUS (duração):	OBJETIVOS	EXERCICIOS	Repet:	CM /PEI	Graus de dificuldade	Respiração	VARIAÇÂO DO EXERCICIO (Materiais, Desafio, Sequência)
B1	**Aquecimento (10 min)**	-Controlo Motor (CM) pé -Mobilidade/Flexibilidade - Preparação para AVD - Educação para saúde	- Mobilização Ativa (MA) cervical - MA Ombros - MA Col Lombar - MA Coxo Femurais /equilíbrio - MA Tibiotarsicas - Agachamentos e espreguiçar	5 rep bilateral Alonga/ 20`` 5 rep	-Sim CE e L-S -Sim L-S -Sim CE -Sim CE -Sim CE e LS -Sim CE	-Não -Não - Não - Sim (n=3) - Não -Não - Sim (n=3)	- MA/resp livre -Alonga/exp - Agacha (exp)	Não
Transição p/ água		- Mobilidade/AVD - CM sentado -Arrefecimento gradual - Sair do chão (treino da queda)	- Agachar/sentar no chão - 1X/mês: levantar do chão - Sentado beira piscina bate pés - Sentado: ABD/Adu MMII - Sentado: Flex/Ext joelho	- 1-2X - 1X - 10 rep -10 rep -10 rep	- Não - Não - Sim CE e LS	Não	- Respiração livre	Não
B2	**Objetivos da intervenção (20-25 min)**	MARCHA/EQUILBRIO	- Marcha com dissociação cinturas frente e trás, sem parar -O mesmo, com semi agachamento por passo - Mesmo com palma/muda direção - Marcha com Abd horiz MMSS(Frente: Alonga peitorais; Trás: Fortalece Dorsais) - Marcha lateral para dois lados e com agachamento - Marcha com agachamento+ABD/AD	- 4X 6m ou 2X12m Cada exercício	-Sim CE - Sim CE e LS	Sim com material (Marcha e marcha lateral: luvas, Marcha: luvas ou esparguete)	- Marcha – Resp livre(sopra na água) - Marcha lateral: Inspira na Abd e expira na Adução dos MMSS	SIM - Luvas / esparguete - Em roda – Ft bate palma e utente muda direção - De marcha passa a corrida (desde que nível da água acima de apêndice xifoideu) - Corrida com 4 “tarefas sociais”: 1 palma=sora água; 2 palmas: muda direção; 3 palmas: “salta ao eixo”; 4 palmas:

			MMSS e com contracção glúteos					passou bem; 5 palmas "vira que vira"
BLOCOS:	**FOCUS (duração):**	**OBJETIVOS**	**EXERCICIOS**	**Repet:**	**CM /PEI**	**Graus de dificuldade**	**Respiração**	**VARIAÇÂO DO EXERCICIO (Materias, Desafio, Sequência)**
B2	**Objetivos da intervenção:** *(Os exercícios de mobilização e fortalecimento poderão ser feitos em tanque "com pé" ou água funda)*	MOBILIDADE*/AVD	- 1ª todas as grandes articulações + 2º pequenas - Exercícios funcionais	2X10 rep	- Sim CE e LS	- Aumenta com o nº de artic/movimentos solicitados	- Inspira na Extensão global - Expira na Flexão	- Roda passar objetos - Fila passar objetos
		FORTALECIMENTO*	-I- Grandes grupos musculares, sem materiais -II- Grandes + pequenos sem materiais - III- O mesmo com materiais -IV – O mesmo com materiais e > alavancas, velocidade e carga	- 2x 10 rep	- Sim CE e LS	- Posição das mãos (sem materiais) - Com materiais - Com materiais de maior flutuação ou diâmetro	- Expira quando faz força e/ou - Expira na flexão global - Inspira na extensão + ABd	- Fila com bola - Roda/círculo com bolinhas
		TREINO AERÓBIO	- Natação com snorkle (com ou sem colete) - DWR (com ou sem colete/esparguete)	- 8 min -20 min	- Sim CE e LS	60% a 80% da FCM	Respiração livre	Sem materiais suplementares
B3	**Voltar à calma (5-10 min)**	- Ai – Chi (facultativo) - Alongamentos (sempre) - Adaptação ao Meio Aquático (facultativo) ("Tempos livres")	- Peitorais (Dinâmicos) Alongamentos na Parede: - Cadeia posterior/anterior - Rotações do tronco em flutuação - Músculos da cervical - Flexores laterais - Quadricípites - Isquio tibiais e gémeos - Musculos Posteriores da Coxa	20 a 30``	- Sim CE e LS	Não	Expira no alongamento	Dois a dois

PEI – Posição Especifica Inicial; CM- controlo motor ; MA- Mobilização/movimento Ativo; AD- Adução; ABD-Abdução; MMII- Membros inferiores; MMSS- Membros Superiores; Ft: Fisioterapeuta; DWR – "Deep Water Running"; CE – Cintura Escapular; CLS – Cintura Lombo Sagrada

Progressão – Forma como mãos "cortam" a água. Com materiais, + repetições, + nº de Grupos musculares com CM, + séries, > Alavanca,, > Velocidade de execução com a mesma qualidade de CM (ter sempre em "mente" os "princípios de treino")
Programa "Acqua Physio Lusa em Terra (se indicado) - Terapia manual + Programa individual de Exercícios de Fisioterapia (Mobilidade, controlo motor, resistência isométrica e fortalecimento) + educação no controlo da dor crónica

OBSERVAÇÕES: Temperatura da água (29º-32º) e Profundidade (1,10 a 2,10)

BLOCO 1 - Objetivos do Aquecimento:
1.1. - Controlo Motor/Posição Especifica Inicial
1.2. - Preparar estruturas para o exercício (mobilidade/flexibilidade)
1.3. - Preparação para algumas atividades diárias/funcionais (AVD / Função)
1.4. – Educação para a Saúde
1.5. – Passagem à água (antes ou depois do aquecimento)pela beira da piscina
BLOCO 2 - Objetivos da Intervenção:
2.1. - Controlo Motor (CM)/ Posição Inicial Especifica (PIE)
2.2. - Mobilidade
2.3. - Fortalecimento (resistência Isométrica e Isotónica)
2.4. - Equilíbrio
2.5. - Capacidade CV (W aeróbio) * – DWR ou natação com snorkle
BLOCO 3 - Voltar à calma/relaxamento/alongamentos
3.1. – Adaptação ao Meio Aquático (facultativo)
3.2. - Ai – Chi (facultativo) 3.3. – Alongamentos (sempre)
* ver *tabela de registo da frequência cardíaca*

Regras Básicas:

Cada bloco tem exercícios com (pelo menos) 3 graus de dificuldade:

- Grau 1 (G1), Grau 2 (G2) e Grau 3 (G3)
- Cada grau está relacionado com:
  - Grau de equilíbrio na água (1º vertical, 2º horizontal)
  - Controlo respiratório (coordenação com o movimento e na água)
  - Nível de controlo da CE, C pelvica e "controlo postural/motor"
  - Nº de repetições que consegue fazer "dentro" desse controlo
  - Se consegue tudo isto com materiais (quer na vertical, quer na horizontal)

Dinâmica: música, utilização especifica de materiais e promoção da relação inter pares (jogos com os mesmos exercicios)

Apêndice VII

Quadro 2 - Tabela de registos da frequência cardíaca

Classe: …………………………………………………………….**Mês**……………………………………. **Ano** …………………….

Fisioterapeuta: ………………………………………………………..

Nome		1ª Semana	2ª Semana	3ª Semana	4ª Semana	5º Semana
	FC: repouso					
	FC 60% (220-idade-10x0,6)			70%		80%
	0 – 10 (Perceção de esforço) **					
	FC: repouso					
	FC 60% (220-idade-10x0,6)			70%		80%
	0 – 10 (Perceção de esforço) **					
	FC: repouso					
	FC 60% (220-idade-10x0,6)			70%		80%
	0 – 10 (Perceção de esforço) **					
	FC: repouso					
	FC 60% (220-idade-10x0,6)			70%		80%
	0 – 10 (Perceção de esforço) **					
	FC: repouso					
	FC 60% (220-idade-10x0,6)			70%		80%
	0 – 10 (Perceção de esforço) **					
	FC: repouso					
	FC 60% (220-idade-10x0,6)			70%		80%
	0 – 10 (Perceção de esforço) **					
Treino aeróbio (8 min): 2’corre lento + 2’ corre rápido + 2 + 2(iguais): mede imediatamente batimentos em 15’’ x 4 e pergunta-se **						

Observações:

Apêndice VIII

Sessão Teórico-Prática – "O controle da Dor Crónica e exercícios para a mesma" - Modelo de *flyers* e poster

Anexos

Anexo 1

Escala Visual Análoga para dor (100 mm)

Nome:	
Nº de inscrição	Data:

ESCALA VISUAL ANALÓGICA

Sem Dor _____ Dor Máxima

Anexo 2

Quebec Back Pain Disability Scale (QBPDS) – Escala de avaliação da dor, função e incapacidade na dor crónica lombar (versão portuguesa)

Escola Superior de Saúde - Instituto Politécnico de Setúbal

Escala de Dor Lombar e Incapacidade de Quebec

NOME:_____ IDADE:_____

DATA DA AVALIAÇÃO:_____

Este questionário pretende saber como a sua dor nas costas afecta a sua vida no dia à dia. Pessoas com dores de costas poderão achar difícil a realização de algumas actividades diárias. Nós gostaríamos de saber se acha difícil a realização de algumas das actividades listadas abaixo, devido à sua dor de costas. Para cada actividade há uma escala de 0 a 5. Por favor escolha uma opção de resposta para cada actividade (**preencha todas as actividades**) colocando uma cruz no quadrado que corresponde à sua resposta.

Hoje, tem dificuldade em realizar as seguintes actividades devido à sua dor de costas?

		0 Sem dificuldade nenhuma	1 Com Um mínimo de dificuldade	2 Com alguma dificuldade	3 Com Bastante dificuldade	4 Com muita dificuldade	5 Incapaz de realizar
1	Levantar-se da cama						
2	Dormir toda a noite						
3	Virar-se na cama						
4	Andar de carro						
5	Estar de pé durante 20-30 minutos						
6	Estar sentado numa cadeira por várias horas						
7	Subir um lance de escadas						
8	Andar 300-400 metros						
9	Andar vários quilómetros						
10	Alcançar prateleiras altas						
11	Atirar uma bola						
12	Correr cerca de 100 metros						
13	Tirar comida do frigorífico						
14	Fazer a cama						
15	Calçar meias (*collants*)						
16	Dobrar-se à frente para limpar a banheira						
17	Mover uma cadeira						
18	Puxar ou empurrar portas pesadas						
19	Carregar dois sacos de compras						
20	Levantar e carregar uma mala pesada						

Adicione todos os números para obter um score total:_____

Alteração mínima detectável (intervalo de confiança de 90%) 15 pontos

Adaptado e validado para a população Portuguesa por Filipa Nunes, Patrícia Ribeiro e Eduardo Cruz.
Escola Superior de Saúde do Setúbal (2005)
A versão original da escala foi desenvolvida por Jacek Kopec e seus colaboradores (1995)

Anexo 3

"Western Ontario and McMaster Universities" (WOMAC) - Escala de avaliação da dor, rigidez, função e incapacidade na osteoartrose das ancas e joelhos (versão portuguesa)

INDICE WOMAC PARA OSTEOARTROSE

Nome: _____ Data avaliação: ____/____/_____

As perguntas a seguir referem-se à INTENSIDADE DA DOR que está actualmente a sentir devido a artrose do seu joelho. Para cada situação, por favor, coloque a intensidade da dor que sentiu nas últimas 72 horas (3 dias)

Pergunta: Qual a intensidade da sua dor?

1-Caminhando num lugar plano.
Nenhuma ☐ Pouca ☐ Moderada ☐ Intensa ☐ Muito intensa ☐

2- Subir ou descer escadas.
Nenhuma ☐ Pouca ☐ Moderada ☐ Intensa ☐ Muito intensa ☐

3- A noite deitado na cama.
Nenhuma ☐ Pouca ☐ Moderada ☐ Intensa ☐ Muito intensa ☐

4-Sentando-se ou deitando-se.
Nenhuma ☐ Pouca ☐ Moderada ☐ Intensa ☐ Muito intensa ☐

5. Ficando em pé.
Nenhuma ☐ Pouca ☐ Moderada ☐ Intensa ☐ Muito intensa ☐

TOTAL: _____

As perguntas a seguir referem-se a intensidade de RIGIDEZ nas articulações (não dor), que está actualmente a sentir devido a artrose no seu joelho nas últimas 72 horas. Rigidez é uma sensação de restrição ou dificuldade para movimentar as suas articulações.

1- Qual é a intensidade da sua rigidez logo após acordar de manhã?
Nenhuma ☐ Pouca ☐ Moderada ☐ Intensa ☐ Muito intensa ☐

2- Qual é a intensidade da sua rigidez após se sentar, se deitar ou repousar no decorrer do dia?
Nenhuma ☐ Pouca ☐ Moderada ☐ Intensa ☐ Muito intensa ☐

TOTAL: _____

As perguntas a seguir referem-se a sua ACTIVIDADE FÍSICA. Nós chamamos actividade física, à sua capacidade de movimentar-se e cuidar de si mesmo(a). Para cada uma das actividades a seguir, por favor, indique o grau de dificuldade que está a ter devido à artrose no seu joelho durante as últimas 72 horas.

Pergunta: Qual o grau de dificuldade que você tem ao:

1 - Descer escadas.
Nenhuma ☐ Pouca ☐ Moderada ☐ Intensa ☐ Muito intensa ☐

2- Subir escadas.
Nenhuma ☐ Pouca ☐ Moderada ☐ Intensa ☐ Muito intensa ☐

3- Levantar-se estando sentada.
Nenhuma ☐ Pouca ☐ Moderada ☐ Intensa ☐ Muito intensa ☐

4- Ficar em pé.
Nenhuma ☐ Pouca ☐ Moderada ☐ Intensa ☐ Muito intensa ☐

5- Abaixar-se para apanhar algo.

Nenhuma ☐ Pouca ☐ Moderada ☐ Intensa ☐ Muito intensa ☐

6- Andar no plano.

Nenhuma ☐ Pouca ☐ Moderada ☐ Intensa ☐ Muito intensa ☐

7- Entrar e sair do carro.

Nenhuma ☐ Pouca ☐ Moderada ☐ Intensa ☐ Muito intensa ☐

8- Ir fazer compras.

Nenhuma ☐ Pouca ☐ Moderada ☐ Intensa ☐ Muito intensa ☐

9- Colocar meias.

Nenhuma ☐ Pouca ☐ Moderada ☐ Intensa ☐ Muito intensa ☐

10- Levantar-se da cama.

Nenhuma ☐ Pouca ☐ Moderada ☐ Intensa ☐ Muito intensa ☐

11- Tirar as meias.

Nenhuma ☐ Pouca ☐ Moderada ☐ Intensa ☐ Muito intensa ☐

12- Ficar deitado na cama.

Nenhuma ☐ Pouca ☐ Moderada ☐ Intensa ☐ Muito intensa ☐

13- Entrar e sair do banho.

Nenhuma ☐ Pouca ☐ Moderada ☐ Intensa ☐ Muito intensa ☐

14 - Se sentar.

Nenhuma ☐ Pouca ☐ Moderada ☐ Intensa ☐ Muito intensa ☐

15- Sentar e levantar do vaso sanitário.

Nenhuma ☐ Pouca ☐ Moderada ☐ Intensa ☐ Muito intensa ☐

16- Fazer tarefas domésticas pesadas.

Nenhuma ☐ Pouca ☐ Moderada ☐ Intensa ☐ Muito intensa ☐

17- Fazer tarefas domésticas leves.

Nenhuma ☐ Pouca ☐ Moderada ☐ Intensa ☐ Muito intensa ☐

TOTAL: _____

OBRIGADO POR COMPLETAR ESTE QUESTIONÁRIO

Anexo 4

SF-12 – Escala de avaliação da saúde geral (física e mental) – Versão curta adaptada da SG-36 (versão portuguesa)

1 QUESTIONÁRIO DE ESTADO DE SAÚDE

Adaptação de Quaresma

As questões que se seguem pedem-lhe opinião sobre a sua saúde, a forma como se sente e sobre a capacidade de desempenhar as atividades habituais. Pedimos que leia com atenção cada pergunta e responda o mais honestamente possível.

Se não tiver a certeza sobre a resposta a dar, dê-nos a que achar mais apropriada e, se quiser, escreva um comentário a seguir à pergunta.

Para a pergunta 1 por favor assinale (●) a opção que melhor descreve a sua saúde.

1 – Em geral, diria que a sua saúde é:

Óptima	Muito boa	Boa	Razoável	Fraca
O	O	O	O	O

2 – As perguntas que se seguem são sobre atividades que executa no seu dia-a-dia.

Será que a sua saúde o/a limita nestas atividades? Se sim, quanto? (por favor assinale a sua opção (●) em cada linha)

	Sim muito limitado/a	Sim, um pouco limitado/a	Não, nada limitado/a
a) Atividades moderadas, tais como deslocar uma mesa ou aspirar a casa	O	O	O
b) Subir **vários** lanços de escada	O	O	O

3 – Durante as ultimas semanas teve, no seu trabalho ou atividades diárias, alguns problemas apresentados a seguir como consequência <u>do seu estado de saúde físico</u>? (por favor assinale a sua opção (●)em cada linha)

	Sempre	A maior parte do tempo	Bastante tempo	Algum tempo	Pouco tempo	Nunca
a) Fez **menos** do que queria	O	O	O	O	O	O
b) Sentiu-se limitado/a no **tipo** de trabalho ou outras atividades	O	O	O	O	O	O

4 . Durante as últimas 4 semanas, teve com o seu trabalho ou com as suas atividades diárias, algum dos problemas apresentados a seguir <u>devido a quaisquer problemas emocionais</u> (tal como sentir-se deprimido/a ou ansioso/a) (por favor assinale a sua opção (●)em cada linha)

	Sempre	A maior parte do tempo	Bastante tempo	Algum tempo	Pouco tempo	Nunca
a) Fez menos do que queria	O	O	O	O	O	O
b) Não executou o trabalho ou outras atividades **tão cuidadosamente** como era costume	O	O	O	O	O	O

5 – Durante as últimas 4 semanas, de que forma é que a <u>dor</u> interferiu com o seu trabalho normal? (no trabalho doméstico ou profissional) (por favor assinale a opção (●) que melhor descreve a sua saúde)

Absolutamente nada	Pouco	Moderadamente	Bastante	Imenso
O	O	O	O	O

6 – As perguntas que se seguem pretendem avaliar a forma <u>como se sentiu e como lhe correram as</u> <u>coisas nas últimas 4 semanas</u> (por favor assinale a sua opção (●)em cada linha)**.**

Quanto tempo, nas **últimas 4 semanas** …	Sempre	A maior parte do tempo	Bastante tempo	Algum tempo	Pouco tempo	Nunca
a) Se sentiu calmo/a e tranquilo/a?	O	O	O	O	O	O
b) Se sentiu com muita energia?	O	O	O	O	O	O
c)Se sentiu triste e em baixo?	O	O	O	O	O	O

7 – Durante as últimas 4 semanas, até que ponto é que a sua <u>saúde física ou problemas emocionais</u> limitaram a sua atividade social (tal como visitar amigos ou familiares próximos)?

Sempre	A maior parte do tempo	Algum tempo	Pouco tempo	Nunca
O	O	O	O	O

Obrigada pela colaboração!

Anexo 5

Modified Behavioral Regulation in Exercise Questionnaire (BREQ-2) – Escala de avaliação da motivação para o exercício (versão portuguesa)

BREQ-2 – Versão Portuguesa
(Palmeira, A., Teixeira, P. Silva, M. & Markland, D., 2007)

Estamos interessados nas razões fundamentais das pessoas na decisão de se envolverem ou não envolverem no exercício terapêutico aquático (Hidroterapia). Usando a escala abaixo, por favor indique qual o nível mais verdadeiro para si. Relembramos que não há respostas certas ou erradas nem perguntas traiçoeiras. Queremos apenas saber como é que se sente em relação à Hidroterapia.

Porque é que quer fazer exercício hidroterapia ?

Não é verdade para mim		Algumas vezes é verdade para mim		Muitas vezes é verdade para mim
0	1	2	3	4

1. Faço hidroterapia porque outras pessoas dizem que devo fazer……0 1 2 3 4
2. Sinto-me culpado/a quando não faço hidroterapia……..0 1 2 3 4
3. Dou valor aos benefícios/vantagens da hidroterapia……...0 1 2 3 4
4. Faço hidroterapia porque é divertido……...0 1 2 3 4
5. Não vejo porque é que tenho de fazer hidroterapia……0 1 2 3 4
6. Participo na hidroterapia porque os meus amigos/família dizem que devo fazer……...0 1 2 3 4
7. Sinto-me envergonhado/a quando falto a uma sessão de Hidroterapia……...0 1 2 3 4
8. É importante para mim fazer hidroterapia regularmente……0 1 2 3 4
9. Não percebo porque é que tenho de fazer hidroterapia……0 1 2 3 4
10. Gosto das minhas sessões de hidroterapia……...0 1 2 3 4
11. Faço hidroterapia porque os outros vão ficar insatisfeitos comigo se não fizer……..0 1 2 3 4
12. Não percebo o objectivo de fazer Hidroterapia……...0 1 2 3 4
13. Sinto-me fracassado/a quando não faço hidroterapia durante algum tempo……...0 1 2 3 4
14. Penso que é importante fazer um esforço por fazer hidroterapia regularmente……...0 1 2 3 4
15. Acho a hidroterapia uma atividade agradável……..0 1 2 3 4
16. Sinto-me pressionado/a pela minha família e amigos para fazer hidroterapia……0 1 2 3 4
17. Sinto-me ansioso/a se não fizer hidroterapia regularmente……..0 1 2 3 4
18. Fico bem disposto e satisfeito por praticar hidroterapia……...0 1 2 3 4
19. Penso que a hidroterapia é uma perda de tempo……...0 1 2 3 4