CLINICAL REASONING AND EVIDENCE BASED PRACTICE IN AQUATIC PHYSIOTHERAPY

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Lecture Aquaevidence, Leuven 2009

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CLINICAL REASONING

Definition:

- “a process in which the clinician, interacting with significant others (client, care givers, health care team members), structures meaning, goals and health management strategies based on clinical data, client choices and professional judgement and knowledge.”

(Higgs and Jones, 2000)

CLINICAL REASONING IN AQUATIC THERAPY

- What are the additional considerations related to an aquatic environment?

AQUATIC THERAPY AND LAND THERAPY

- Direct comparison
- Added benefit
- Key part of multimodal intervention

TREATMENT

- Which treatment techniques don't work well in aquatic physiotherapy and why?
- How do you recognize or observe that it wasn't working?
- How do you modify the techniques or exercises that didn't work?
- Which treatment techniques work well and why?

FUNCTION AND ACTIVITIES OF DAILY LIVING (ADL)

What are the considerations for the patient related to the relationship of aquatic therapy to their normal daily function?

SCREENING AND PHYSIOLOGY OF IMMERSION

LIST

- Physiological or screening considerations
- Relevance
- Impact on planning
- How will you monitor?

REFERRAL AND SCREENING

Date of Assessment:_____
CURRENT HISTORY: (Include reasons for referral to Aquatic Phys/ Hydrotherapy)
Weight Bearing Status : _____
Medications (include dosage):

PAST MEDICAL PROBLEMS:

_____
_____

Previous Aquatic Physiotherapy/Hydrotherapy Yes/No
Level of Assistance required in the water

- Maximal ☐ Moderate ☐ Minimal ☐

PROBLEM **OBJECTIVE MEASURE**

_____
_____

SMART GOALS FOR AQUATIC PHYSIOTHERAPY

- _____
  _____

CommunicationNAD ☐ Impaired ☐Comments
Primary Language _____Interpreter RequiredYes/No
Cognition/Behaviour _NAD ☐ Impaired ☐Comments
Assistance Required Transfers, Mobility, Dressing
DISCHARGE PLANNING FOR SELF MANAGEMENT:

- Chronic condition requiring self management strategies ☐
- Any issues with transport or support ☐
- Attended local pool previously ☐
- Which pool _____
- Land physio discussed local pool attendance after AqPT☐

REFERRAL AND SCREENING

		YES	NO	Comments
• CNS	Epilepsy	☐	☐	
	Headaches/Dizziness	☐	☐	
• CVS	Hyper/Hypotension	☐	☐	
	Cardiac Condition	☐	☐	
	Peripheral Vascular disease	☐	☐	
• R.S.	Respiratory Condition	☐	☐	
• G.I.T.	Incontinence: Faeces	☐	☐	
• G.U.T.	Incontinence: Urine	☐	☐	
• SKIN	Open Wound	☐	☐	
	Sensitivity to Chlorine	☐	☐	
• EARS	Infections, Hearing Impairment/Hearing Aids,		☐	
• EYES	Infections/Discharges, Visual Impairment			
• FEET	Tinea, Papilloma, Warts	☐	☐	

- OTHER Febrile Condition — Renal Problem — Acute Inflammatory Condition
  Swallowing Problems — Deep radiotherapy in past 3 months — Infectious diseases
- Diabetes — Pregnant
- Gait: Independent ☐ — Assisted ☐ — Supervised ☐ — Non ambulant ☐
- Gait Aids
- Recommended mode of entry to Pool: Steps ☐ — Over side ☐ — Hoist ☐
- Is the patient a swimmer?
- Is the patient afraid of water?

OUTCOME MEASURES SUBJECTIVE AND OBJECTIVE MEASURES

- Outcome measures are important to show change over time
- To assist with determining the patient's function and with guiding therapy are there any relevant subjective information or objective measures you can use
  - In the land based assessment?
  - Poolside?
  - In the pool?

AIMS OF TREATMENT

- Aims of treatment
- Treatment techniques/ exercises including progression
- Hydrostatic/dynamic principle underlying technique

SMART GOALS

- Specific
- Measured
- Agreed
- Realistic
- Timed

EWAC MEDICAL
We get you moving

EVIDENCE BASED PRACTICE

What is evidence-based practice?

Physiotherapy **PRACTICE** based on the application of interventions and management acknowledged as efficacious by a process of analysis and critique.

EVIDENCE

- EVIDENCE may include the scrutiny by peers of clinical research, published opinion in journals and texts, and clinical treatment supported by outcome measurement

- What type of evidence is better than another type of evidence?

SYSTEMATIC REVIEWS THAT INCLUDE AQUATIC THERAPY

- Sub-acute low back pain. (Pengel et al 2002)
- Fibromyalgia. (Adams & Sim 2005)
- Pre-operative physiotherapy for lower limb joint replacement surgery (Ackerman & Bennell 2004)
- Physiotherapy interventions for ankylosing spondylitis (Dagfinrud et al 2004)

SYSTEMATIC REVIEWS FOCUSED ON AQUATIC THERAPY

- Children with neuromotor impairments (Getz et al 2006)
- Fibromyalgia (Gowans and deHueck 2007)
- Pain in adults (Hall 2008)
- Aquatic exercise in the LBP (Waller 2009)

SYSTEMATIC REVIEW: HYDROTHERAPY

- 1984 to 2001: 34 trials
- Moderate quality evidence supports the effectiveness of hydrotherapy
  - pain
  - joint mobility
  - function
  - self-efficacy
  - affect
  - fitness
  - balance
- in patients with
  - rheumatic conditions,
  - chronic low back pain and
  - older adults

(Geytenbeek 2002)

AQUATIC PHYSIOTHERAPY EPB GUIDE 2008

- 1997-2007
- Reference to 154 published papers
  - 11 systematic reviews
  - 42 randomised controlled trials
  - 101 reports of lower levels of evidence
- Summarized into diagnostic categories
  - What evidence?
  - What treatment?
  - What effect? (Geytenbeek 2008)

AQUATIC PHYSIOTHERAPY EPB GUIDE 2008

- Systematic review of aquatic physiotherapy
- Key words
  - "aquatic physiotherapy", "hydrotherapy", "aquatic therapy", "aquatic exercise" and "water exercise"
- Databases
  - CINAHL, MEDLINE, EMBASE, PEDro, AMED, Ageline, Sports Discuss, Cochrane Library

AQUATIC PHYSIOTHERAPY EPB GUIDE 2008

- Appraisal included
  - trial type and level of evidence
  - Subjects
  - frequency and duration of intervention
  - description of the intervention
  - outcome measures.

AQUATIC PHYSIOTHERAPY EPB GUIDE 2008

Aquatic therapy in areas of physiotherapy practice:

- musculoskeletal
- neurology
- paediatrics
- womens health
- cardiorespiratory
- sports

AQUATIC PHYSIOTHERAPY EPB GUIDE 2008

Conditions included:

- OA, RA, FMS, AS, TKR, THR
- Back pain, lower- and upper limb conditions
- CVA, ABI, SCI, Adult CP, MS, PPS, GBS
- CP, MD, juvenile arthritis, Rett, CRPS, autism
- Peri-natal, post-menopause, OP, obesity
- COPD, heart failure

AQUATIC PHYSIOTHERAPY EPBG OUTCOME DOMAINS

- Function and ambulation
- Strength
- Range of movement, flexibility
- Pain
- Balance
- well-being, depression, quality of life
- health status, activity and participation
- athletic performance
- body composition
- cardiac and respiratory function, fitness
- Spasticity
- medication use
- cost-effectiveness

AQUATIC PHYSIOTHERAPY EPB GUIDE 2008

- Musculoskeletal aquatic physiotherapy
  - 69 of 151 articles (45%)
  - 2606 of 3227 subjects (81%) s
- Individual, one-to-one, or manual aquatic physiotherapy practice remains understudied
  - passive joint mobilisation
  - therapist observation and correction of preferred movement patterns
  - movements based on hydrodynamic variations and patient performance
  - Halliwick, Watsu and Bad Ragaz Methods

AQUATIC PHYSIOTHERAPY EPB GUIDE

Evidence is growing

Clinicians should apply self-reflection and personal critique, using outcome measures and making regular attempts to keep abreast of new research evidence (Geytenbeek 2008)

JOINT ARTHROPLASTY AQ PT EPB GUIDE 2008

- 9 papers
- 176 subjects
- Levels of evidence
  - I, II, III-3, IV
- Outcome domains
  - **func, amb, strgth, pain, ROM (supported by Level II/RCT evidence)**

WHAT EVIDENCE?

- 9 articles for patients undergoing lower limb joint arthroplasty were identified
- 1 RCT (Gilbey 2003) n= 57

Gilbey HJ. Ackland TR. Tapper J. Wang AW (2003) Perioperative exercise improves function following total hip arthroplasty: A randomized controlled trial. Journal of Musculoskeletal Research. 7(2):111-123

WHAT TREATMENT?

- 30 minutes 2 x /week with additional land and home-based components for 20 weeks
- Warm up - walking 3 sets of 10 widths (7m) of the pool (forwards, backwards, side-stepping
- Muscle strengthening exercises - partial squat and hip hike
- Ankle weights were introduced where appropriate to increase the resistance when water cycling while the patient was supported in a flotation device (5 minutes)
- Step-up activities (increasing height)
- Balance activities with eyes open and eyes closed
- Water running with the water level approximating the xiphoid process and the use of flippers were also introduced into the program for some of the younger patients

WHAT EFFECT?

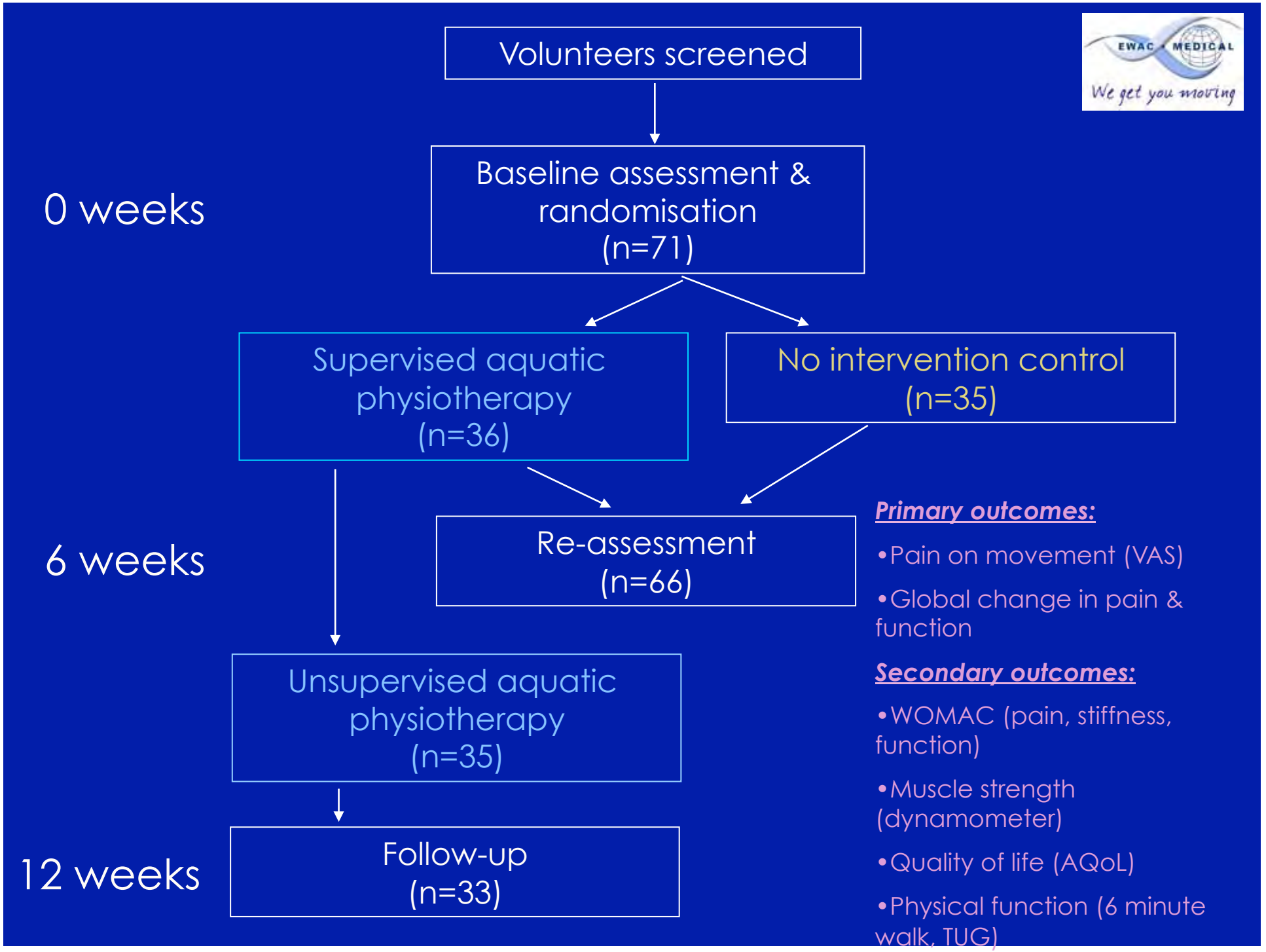
- Improved
  - Ambulatory function (6 minute walk test)
  - Lower limb strength (isokinetic hip strength)
  - Range of movement of the hip

Hinman RS, Heywood SE, Day AR (2007) Aquatic Physical therapy for hip and knee osteoarthritis: Results of a single-blind randomized controlled trial. Physical Therapy. 87:32-43

Centre for Health, Exercise & Sports Medicine, School of Physiotherapy, The University of Melbourne

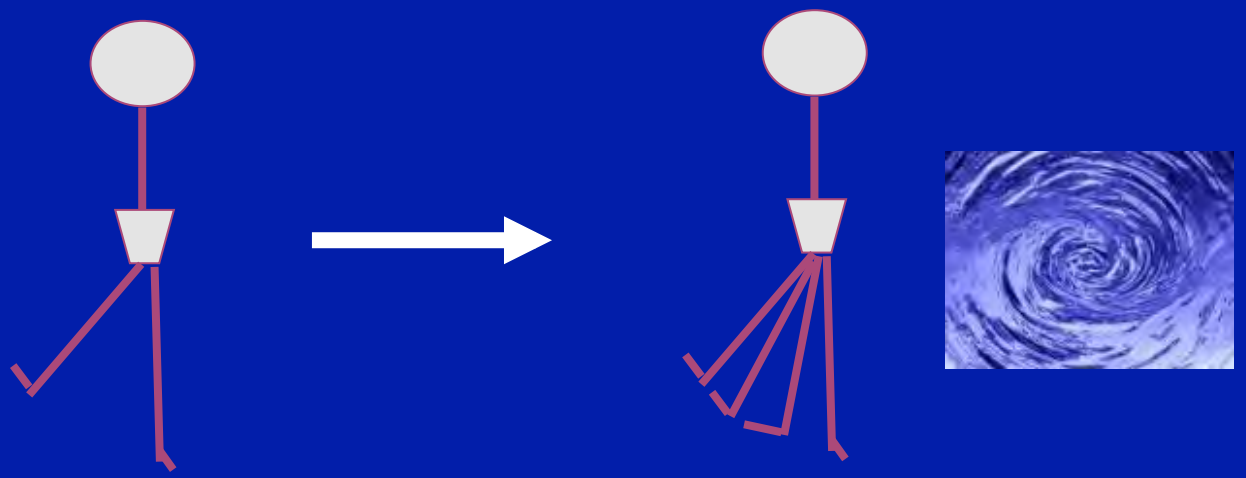
&

Physiotherapy Department, Sunshine Hospital, Western Health, Melbourne


Volunteers screened
Baseline assessment & randomisation (n=71)
0 weeks
Supervised aquatic physiotherapy (n=36)
No intervention control (n=35)
Re-assessment (n=66)
6 weeks
Unsupervised aquatic physiotherapy (n=35)
Follow-up (n=33)
12 weeks
Primary outcomes:
•Pain on movement (VAS)
•Global change in pain & function
Secondary outcomes:
•WOMAC (pain, stiffness, function)
•Muscle strength (dynamometer)
•Quality of life (AQoL)
•Physical function (6 minute walk, TUG)

Aquatic physiotherapy

- Group sessions 2 x week, 6 weeks
- Supervised by physiotherapist
- Progressive 12 phase program
- Individual progression through phases



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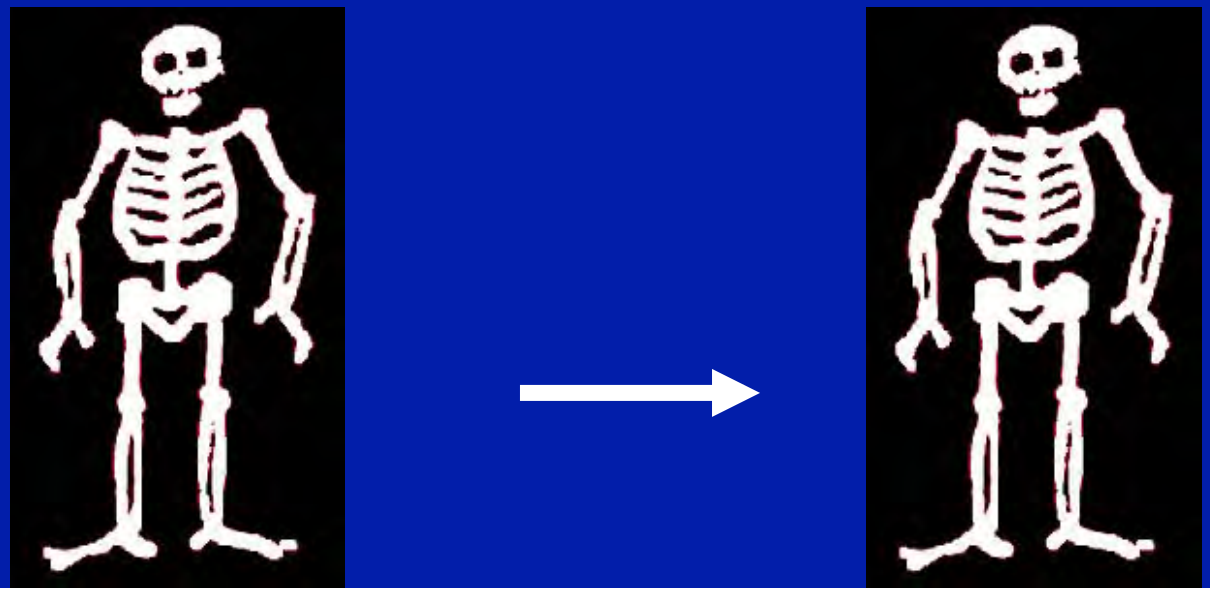

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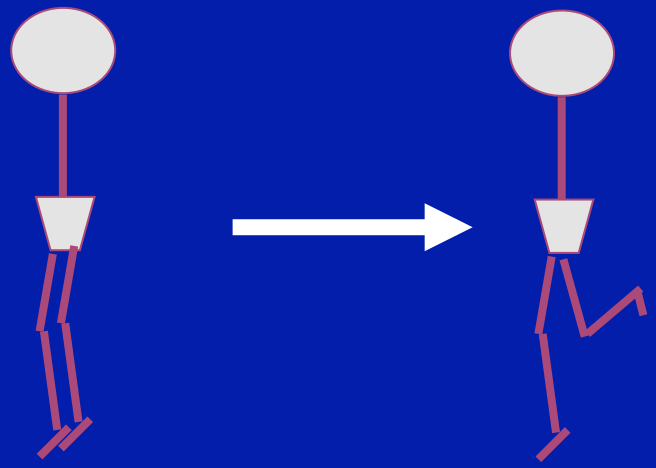

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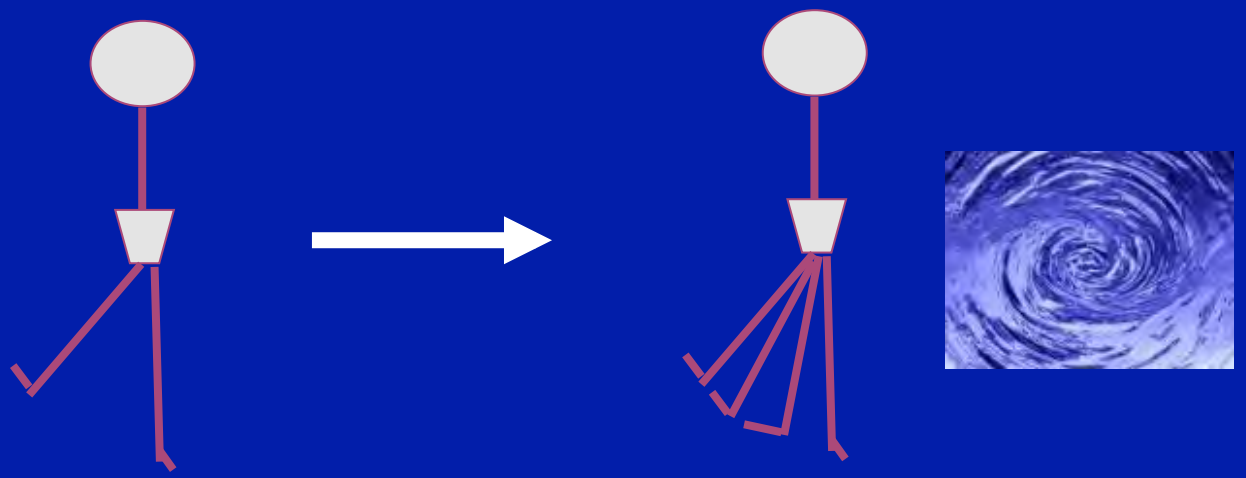

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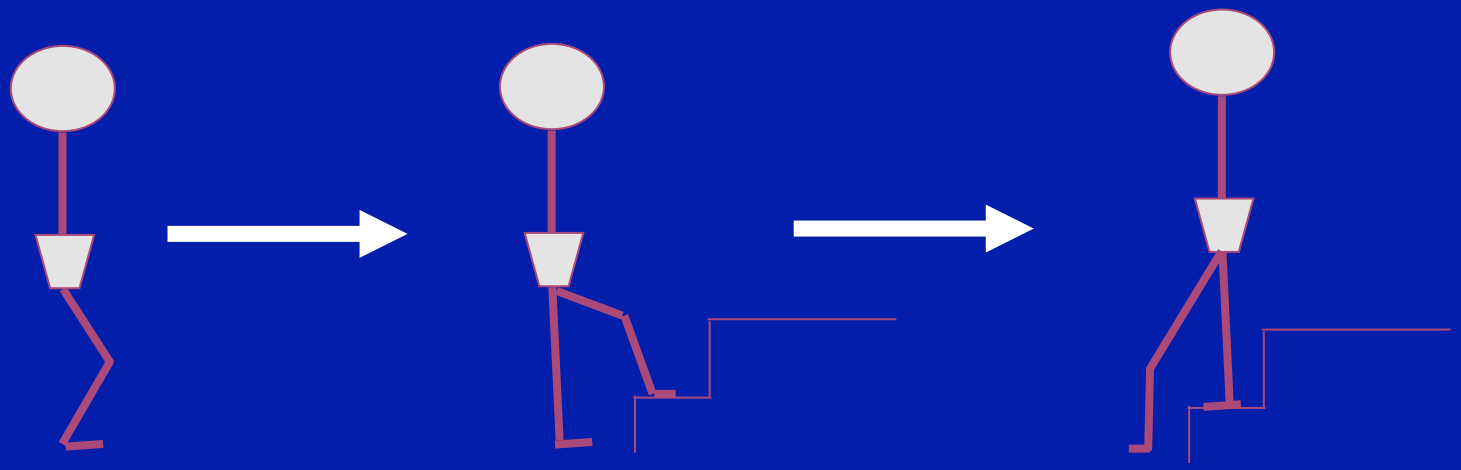

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2 sets of 10 reps → 3 sets of 10 reps → 4 sets of 10 reps → 5 sets of 10 reps

6 week results: secondary outcomes

	Control	APT	*p* value
WOMAC (mm)			
–Pain (0-500)	12 (50)	-58 (97)	<0.001
–Stiffness (0-200)	-1 (19)	-22 (39)	<0.01
–Function (0-1700)	43 (168)	-135 (319)	<0.001
Muscle strength (kg)			
– R quads	-0.4 (6.7)	2.1 (8.7)	0.04
– L quads	1.3 (5.8)	2.0 (8.1)	0.23
– R hip abductor	-0.7 (3.5)	2.1 (5.9)	<0.01
– L hip abductor	-1.8 (5.3)	1.7 (6.7)	0.01
6-min walk (m)	0 (28)	20 (48)	<0.01
AQoL (-0.04-1.00)	0.00 (0.09)	0.01 (0.05)	0.01