Effectiveness of Underwater Gymnasium Program for Patients with Osteoarthritic Knee Condition

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Background

• Osteoarthritis (OA) Knee is one of the most frequent causes of pain, loss of function & disability in adults requiring medical intervention (Arden, N., et al., 2006)

• Common in HK elders (47.0%) seeking medical treatment (Center for Health Protection, 2009)

• Under-water exercise was suggested as a better starting media for rehabilitation than land exercise for OA patients because of the less joint loading (Cochrane Database of Systematic Reviews 2007; Roper, J.A., et al., 2013)

• Objective of the study
  To evaluate & compare the effectiveness of underwater gymnasium program versus land-based physiotherapy program for patients with OA knee

The Physiotherapy Department of the Queen Elizabeth Hospital being the 1st public hospital of the Hospital Authority launching the underwater gymnasium program for designated clienteles since June 2012
Methodology

Patients with Dx of OA Knee attending QEH PT OPD

Baseline Assessment – Pain, Quadriceps Strength, Western Ontario and McMaster Universities Osteoarthritis Index, 6-min Walk Test, Short-Form 12 QoL Survey

Pre-at 1st PT OPD attendance

Study Period: June-December 2012

6-week Rx period

LAND (n=33)
Land-based Physiotherapy program

HYDRO (n=32)
Under-water Gymnasium program

Post-Rx Assessment

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Results

Numeric Pain Rating Scale (NPRS)

Hydro group ↓ 56%, *p<0.05
Land group ↓ 48%, *p<0.05
Between-group difference, †p<0.05

Quadriiceps Strength

Hydro group ↑ 33%, *p<0.05
Land group ↑ 33%, *p<0.05

6-min Walk Test

Hydro group ↑ 21%, *p<0.05
Land group ↑ 24%, *p<0.05

Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC)

Hydro group ↓ 41%, *p<0.05
Land group ↓ 20%, *p<0.05
Between-group difference, †p<0.05

Short Form-12 Physical Component Summary (PCS)

Hydro group ↑ 15%, *p<0.05
Land group ↑ 14%, *p<0.05

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Discussions & Conclusion

• Both HYDRO and LAND programs were effective with significant pain reduction; increased knee range & strength; increased walking endurance, enhanced physical functioning and health-related quality of life in individuals with OA knee problems.

• HYDRO program demonstrated the merit of better pain relief & improvement of disease-specific functional capability with the possible mechanism of decreased kinesiophobia (fear to move) & concurrent improvement in symptom & quality of life measures.

• Our findings support the use of underwater gym as favourable starting rehabilitation modality for OA knee especially for those having severe pain & fear to move.

• Future studies for different severities of OA knee conditions are recommended.