

Are weekly gym or hydrotherapy sessions effective

at managing symptoms?

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Context

- Regular exercise has been shown to help improve walking ability, fatigue and quality of life (QOL) in people with MS (1). **Exercise guidelines** for people with mild/moderate MS include aerobic exercise and resistance training **2-3 times a week** (2)
- Meta-analyses** show physiotherapy led interventions, often participated in **3 times a week**, to be effective at improving walking performance (3), fatigue (4) and QOL (5)
- The effects of physiotherapist prescribed, individualised gym and hydrotherapy programmes had not previously been evaluated at Kent MS Therapy Centre (**KMSTC**). These programmes are typically performed at a reduced frequency, usually **once a week**, when compared with exercise guidelines and studies from the meta-analyses

Objective

To evaluate the impact of weekly sessions of physiotherapist prescribed, individualised gym and hydrotherapy programmes; focussing on fatigue, QOL and functional mobility.



Facilities at Kent MS Therapy Centre

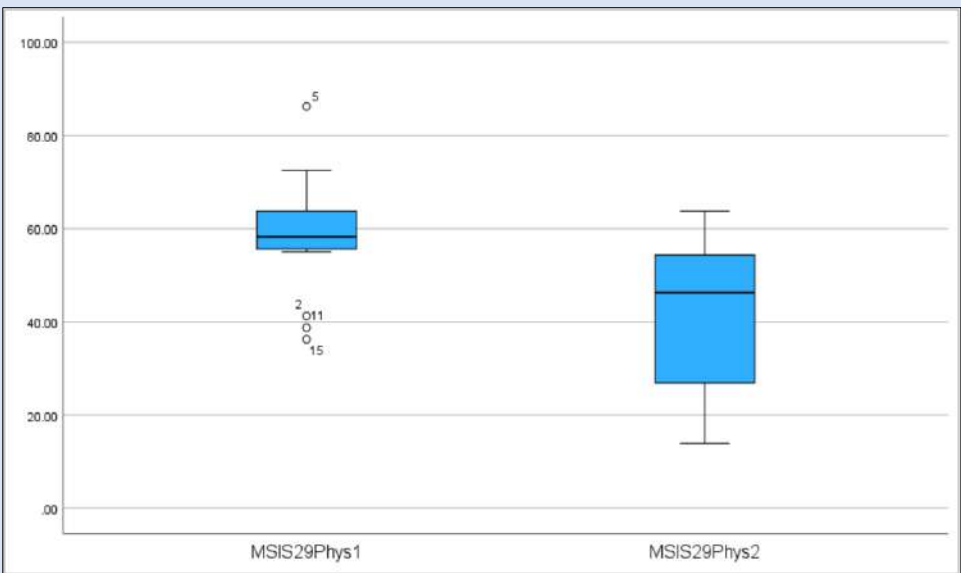
Results

- Paired T-tests indicated significant differences in all outcome measures pre and post intervention
- The effect sizes were large (and clinically significant where a threshold exists) for those outcome measures with $p \leq 0.001$, and medium for all other measures. Clinical significance suggests a meaningful change for the participants

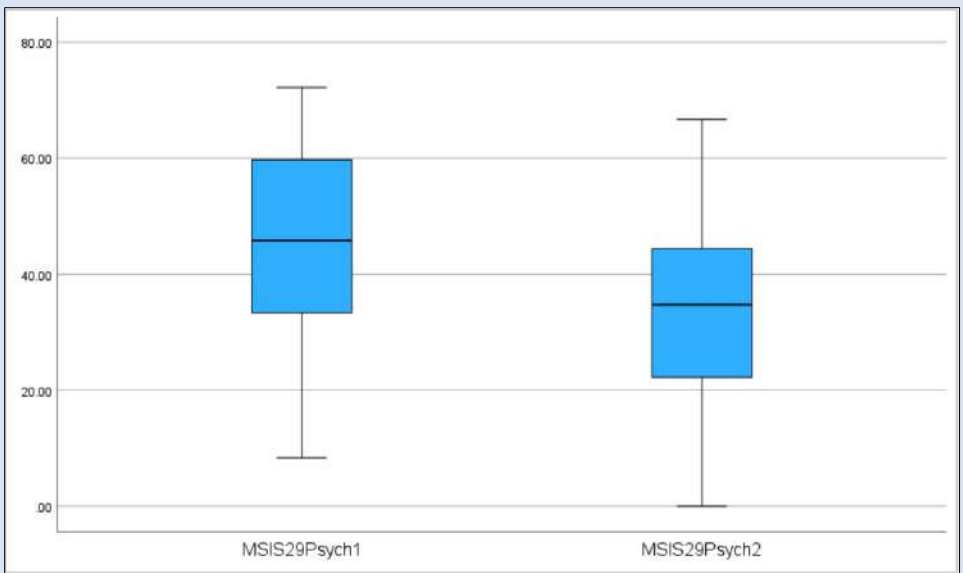
Outcome Measure	Participants (n)	Pre Intervention (Mean $\pm$ SD)	Post Intervention (Mean $\pm$ SD)	Change in score	p-value	Effect Size (Cohen's d)	Clinical Threshold	Mean Change
MSIS-29 Physical	16	58.22 $\pm$ 12.45	46.33 $\pm$ 13.37	11.89	0.002	0.879	8 points	12 points
MSIS-29 Psychological	16	40.62 $\pm$ 19.74	35.42 $\pm$ 18.63	5.20	0.117	0.310		
MFIS Physical	16	26.75 $\pm$ 5.53	22.75 $\pm$ 7.18	4.00	0.004	0.650		
MFIS Cognitive	16	18.94 $\pm$ 9.23	13.19 $\pm$ 7.57	5.75	<0.001	1.083		
MFIS Psychosocial	16	5.38 $\pm$ 1.59	4.13 $\pm$ 2.16	1.25	0.004	0.775		
MFIS Overall	16	51.06 $\pm$ 13.56	40.06 $\pm$ 13.73	11.00	<0.001	1.055	4 points	11 points
TUG Overall Time (s)	11	22.95 $\pm$ 10.9	17.61 $\pm$ 9.27	5.34	0.001	0.880	23%	24%
Sit to Stand	11	2.24 $\pm$ 0.54	1.77 $\pm$ 0.36	0.47	0.005	0.949		
Fwd Gait	11	5.36 $\pm$ 3.19	4.04 $\pm$ 3.02	1.32	0.006	0.750		
Mid Turn	11	3.14 $\pm$ 1.41	3.01 $\pm$ 0.90	0.13	0.361	0.111		
Return Gait	11	6.66 $\pm$ 5.77	4.31 $\pm$ 3.92	2.35	0.022	0.810		
End Turn Sit	11	3.90 $\pm$ 1.22	3.61 $\pm$ 1.76	0.29	0.285	0.190		

Pre and Post Intervention Scores

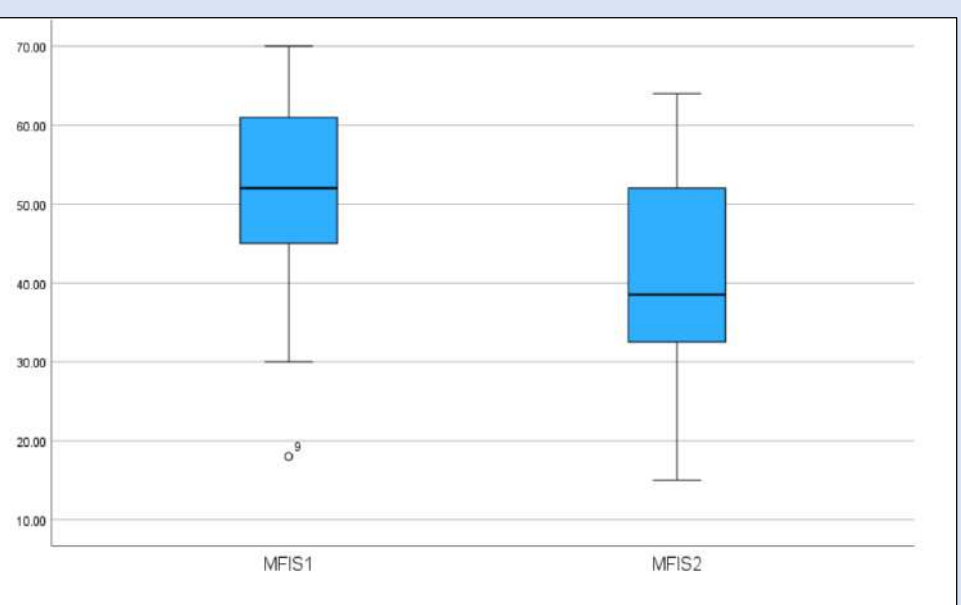
MSIS-29 Phys



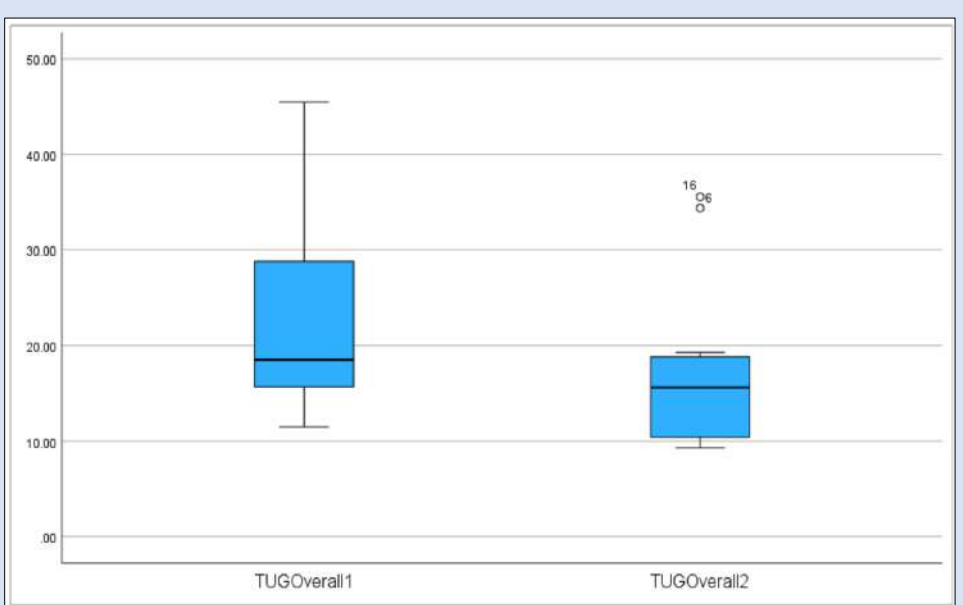
MSIS-29 Psych



MFIS Overall



TUG Overall



Methods

- In this repeated measures study, 10 females and 6 males with MS (Relapsing Remitting 5, Primary Progressive 4, Secondary Progressive 7), mean age 59.1 ± 11.6 years, disease duration 19.7 ± 13.7 years, were assigned to complete 8 individualised gym or hydrotherapy sessions. Eleven participants required walking aids (one stick 6, rollator 3 or wheelchair 2)
- Participants attended one session per week for 8 weeks. All programmes included neuromuscular, balance, flexibility and resistance training; gym programmes also included aerobic training
- Primary outcome measures included a QOL scale (MSIS-29) and a fatigue impact scale (MFIS). A secondary outcome measure, the Timed Up and Go test (TUG) measured functional mobility in the 11 participants who were able to perform this test. Measures were completed pre and post intervention

Conclusion and Implications

- There was strong evidence of clinical improvement following participation in individualised gym and hydrotherapy programmes
- Results may help guide clinical practice at KMSTC and similar settings
- Results can be used to promote the potential benefits of participation in physiotherapist prescribed programmes to KMSTC members
- This study has provided data to help strengthen fund-raising applications for KMSTC
- Further research could investigate the optimal frequency of exercise sessions to help manage symptoms

References
(1) Motl, R.W. and Sandroff, B.M. (2015) 'Benefits of Exercise Training in Multiple Sclerosis', *Current Neurology and Neuroscience Reports*, 15(9), pp. 62 Available at: 10.1007/s11910-015-0585-6.
(2) Leamonth, Y.C. and Motl, R.W. (2021) 'Exercise Training for Multiple Sclerosis: A Narrative Review of History, Benefits, Safety, Guidelines, and Promotion', *International journal of environmental research and public health*, 18(24), pp. 13245 Available at: 10.3390/ijerph182413245.
(3) Leamonth, Y.C., Ensari, I. and Motl, R.W. (2016) 'Physiotherapy and walking outcomes in adults with multiple sclerosis: systematic review and meta-analysis', *Physical therapy reviews*, 21(3-6), pp. 160-172 Available at: 10.1080/10833196.2016.1263415.
(4) Kim, S., Xu, Y., Dore, K., Gewurtz, R., Larivière, N. and Letts, L. (2022) 'Fatigue self-management led by occupational therapists and/or physiotherapists for chronic conditions: A systematic review and meta-analysis', *Chronic illness*, 18(3), pp. 441-457 Available at: 10.1177/17423953211039783.
(5) Alphonsus, K.B., Su, Y. and D'Arcy, C. (2019) 'The effect of exercise, yoga and physiotherapy on the quality of life of people with multiple sclerosis: Systematic review and meta-analysis', *Complementary therapies in medicine*, 43, pp. 188-195 Available at: 10.1016/j.ctim.2019.02.010.