

STATE OF ART IN SURFACE ELECTROMYOGRAPHY DURING HUMAN MOVEMENT IN WATER

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INTRODUCTION: Aquatic exercise is widely used for rehabilitation and functional recovery due to its physical and physiological benefits. However, there is a high variability in reporting on the muscle activity from surface electromyographic (sEMG) signals during aquatic exercise.

AIM: The aim of this study is to review the literature with specific interest in determining if the amount of muscle activity recorded in water is equivalent to out of water when participants were performing the same task.

METHODS: A literature search was performed to identify studies of aquatic exercise movement. Study eligibility criteria: neuromuscular activity in human subjects who performed an aquatic exercise. Data sources. PEDro, CINALH, PUBMED, EMBASE, AMED, AgeLine, the Cochrane Library, and SPORTDiscus databases were examined. Study appraisal and synthesis methods; Two independent reviewers carried out the critical appraisal.

RESULTS: TwentyZone studies were selected for critical appraisal. Sample size, functional tasks analyzed, and muscles recorded were studied for each paper. The contribution of the clinical implications of the paper was evaluated by two experts.

CONCLUSION: Muscle activity tends to be lower in waterZbased compared to landZbased activity and tends to be lower in distal than proximal muscles during waterZbased; however more research is needed to understand why. Further EMG studies could support the understanding of more relevant aspects for clinical practice.