

IMPROVEMENTS IN GAIT BIOMECHANICS AFTER AN AQUATIC EXERCISE PROGRAM IN A HEALTH RESORT SETTING: A CASE STUDY OF KNEE OSTEOARTHRITIS

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Background

Knee osteoarthritis (OA) is one of the most common degenerative joint diseases causing progressive loss of cartilage that leads to joint stiffness, pain, and difficulty walking and performing activities of daily living. Among non-pharmacological interventions, aquatic exercise programs conducted in health resort settings, combining the benefits of therapeutic exercise with the physical and chemical properties of mineral-rich thermal water, have emerged as a promising approach.

Case report

This case study reports results on the improvements in gait biomechanics in a patient with knee OA (female, age 74 y.o., weight 85 kg, height 163 cm, OA grade II-III on the Kellgren and Lawrence scale) after 2-weeks of rehabilitation treatment, delivered in a health resort setting. Treatment included: 12 sessions of mud therapy and thermal baths and 6 sessions of hydrokinesis. Before and after treatment gait biomechanics was measured using a stereophotogrammetric system (Vicon Motion System Ltd, UK) synchronized with force plates (Bertec Corporation, USA). Results showed that mobility and walking pattern improved, as indicated and increase in walking speed (+6% on average), a decrease in double support time (-44% on average), an increase in knee joint angle range of motion during the gait cycle (+3% on average), and an increase in ankle joint power at toe off (+24% on average). These changes were associated with improvements in the patient's condition, measured with the Western Ontario and McMaster Universities Arthritis Index improved (decrease from 39 to 19).

Conclusion

Instrumental assessments indicated improvements in mobility and gait, which were associated with clinically measured improvements in function. These preliminary findings suggest that the health resort setting can offer promising therapeutic benefits for knee OA patients, enhancing functional outcomes.

Keywords: Knee, osteoarthritis, balneotherapy, thermal, rehabilitation.