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Integrating Sport-Based Exercise in Acquired Brain Injury Rehabilitation: A Biopsychosocial Perspective

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INTRODUCTION

Acquired brain injury (ABI) constitutes a significant and growing global public health concern. People with ABI often face a range of physical and psychosocial challenges that span the domains of “body structure and function”, “activity”, and “participation”, as defined by the International Classification of Functioning, Disability, and Health. Multidisciplinary approaches based on exercise therapy with social leisure activities are essential to improve physical recovery and health-related quality of life after injury.

This trial aimed to evaluate the effectiveness of the sport-based exercise therapy program (sET) combined with usual care (UC), compared to UC alone in adults with acquired brain injury (ABI).

METHODOLOGY

In a single-blind randomized controlled trial, 23 adults with ABI (mean age 59.6±10.3years) were assigned to sET+UC (n=11) or UC (n=12).

The intervention included sixteen 60-minute racket sport sessions combined with usual care for the sET+UC group and usual care only for the UC group.

Outcomes encompassed health-related quality of life (SF-36), upper limb motor control (FM-UE), functional capacity (6MWT, 10MWT), mobility (TUG), balance (BBS), and physical activity participation (GPAQ).

RESULTS

Significant differences were found in all outcome analyses at postintervention when comparing between groups.
The sET+UC group showed improvements in both the physical (P=.027, r=.46) and mental component summary (P=.001, r=.71) of the SF-36 as well as FM-UE (P=.004, r=.60), with large effect sizes. Furthermore, the intervention group showed statistically significant gains ($p<.05$, $r>.5$), across functional capacity, balance, and overall physical activity participation.
In contrast, the UC group showed only minimal, non-significant changes across all domains.

CONCLUSION

This trial provides evidence supporting the integration of sport-based exercise therapy into conventional rehabilitation for adults with ABI. The program not only enhanced physical and functional outcomes but also improved quality of life and physical activity engagement.

These findings underscore the value of combining sport-based exercise as a complementary strategy to UC for enhancing multiple domains in this population, emphasizing the potential to optimize patient care by facilitating the transition from supervised exercise in rehabilitation community-grounded sports, filling a critical gap post-rehabilitation, thereby addressing critical gaps post-rehabilitation such as risks of sedentary behavior and social isolation.