

THE UNTAPPED POTENTIAL: ADAPTED PHYSICAL ACTIVITY AND FUNCTIONAL IMPROVEMENT IN ADOLESCENT IDIOPATHIC SCOLIOSIS

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Background and Aims

While standard care for adolescent idiopathic scoliosis (AIS) includes observation and bracing, the specific benefits of tailored exercise warrant further investigation. This prospective study evaluated the impact of a 6-month Adapted Physical Activity (APA) intervention on functional capacity and postural alignment in adolescents with AIS. We hypothesized that APA would lead to measurable gains in these key clinical outcomes.

Methods

Twenty-five adolescents (mean age 14.2 ± 1.8 years, mean Cobb angle $22.5^\circ \pm 8.1^\circ$) with AIS (Cobb angle 10° - 40°) participated in a 6-month individualized APA program. This program, delivered twice weekly (60-minute sessions), focused on active self-correction, core stabilization, and targeted strengthening. Assessments at baseline and 6 months included Cobb angle (radiography), functional capacity (Timed Up and Go, Single Leg Stance), and postural alignment (trunk imbalance, shoulder asymmetry). Adherence was recorded.

Results

Following the 6-month APA program, significant improvements were observed. Mean Timed Up and Go time decreased from 10.8 ± 2.1 s to 8.9 ± 1.5 s ($p < 0.001$), and Single Leg Stance time increased from 8.2 ± 3.5 s to 11.5 ± 4.0 s ($p < 0.001$). Trunk imbalance significantly reduced from 2.1 ± 1.5 cm to 1.2 ± 0.9 cm ($p < 0.001$), and shoulder asymmetry significantly improved ($p = 0.01$). Cobb angle showed a non-significant change ($22.5^\circ \pm 8.1^\circ$ to $21.0^\circ \pm 7.5^\circ$, $p = 0.15$), with 78% demonstrating stabilization or improvement. Adherence was high ($85.2\% \pm 10.5\%$).

Conclusion

Adapted Physical Activity significantly improves function and posture in adolescent idiopathic scoliosis, suggesting its value alongside standard care. Future research should explore long-term effects, compare APA to other interventions, and identify optimal exercise parameters for diverse scoliosis types. Larger studies are needed to optimize APA integration into comprehensive management strategies.

Keywords: Adapted Physical Activity, idiopathic scoliosis