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ABSTRACT

Current data on athleticism characteristics are unique and limited for spirit squad teams (SS), which consists of cheer and dance, such as their neuromuscular and cognitive abilities. PURPOSE: To create profiles and benchmarks of neuromuscular aspects (reactive hopping & kinesthetic body awareness) and cognitive aspects (spatial awareness, peripheral vision, and dynamic vision) of athleticism for SS athletes. METHODS: Active participants on NCAA Division III cheer (n=13) and dance teams (n=18) were profiled and compared to athletes of a non-SS population, like tennis (n=16). Neuromuscular profiles were collected via maximal 1-leg vertical jumps where jump height (JH), power (P) and body control (BC) were recorded. Cognitive abilities such as spatial awareness (SA), spatial memory (SM), peripheral vision (PV), perception scan (PS), multiple object tracking (MOT), and dynamic vision (DV) were assessed and collected on a cognitive sensory station, which consisted of a large touchscreen and tablet. RESULTS: No statistically significant differences were observed between the dance team and cheer team in almost all neuromuscular and cognitive metrics, except for SA and SM ($p < 0.05$) where dancers scored better than cheerleaders. Significant neuromuscular differences were also reported when comparing SS to tennis, with tennis players displaying more JH and P ($p < 0.05$), but SS displaying better BC ($p < 0.005$). No significant cognitive differences were reported between tennis and SS, except for PS where tennis scored better ($p < 0.05$). CONCLUSION: A few cognitive differences in athleticism profiling between SS and non-SS existed, specifically spatial awareness and perception span. In addition, non-SS players exhibited higher neuromuscular qualities, yet SS members displayed better body control during movement. The results can explain how specific training stimuli produces different neuromuscular and cognitive profiles. Future research should aim to expand cognitive and neuromuscular profiles and benchmarks for SS for use in developing functional training programs to improve reactive strength and kinesthetic body awareness, especially in areas of perception span and jump height and power, to help minimize injury and improve competitive performance in these athletes.

INTRODUCTION

Profiling and benchmarking are integral tools for an athlete's progression for performance enhancement and improvement within their respective sport. Most research that focuses on the population of collegiate cheerleaders and dancers, known as spirit squad teams, is dedicated to injury, leaving a gap in the literature on profiling and exploring their cognitive capabilities. It is important to evaluate the components that are utilized within this sport such as physical strength, agility, stamina, and skillful suppleness in a competition which requires a high level of cognitive capabilities to display a muscle memory of their techniques all while flawlessly executing the strict, regimented, and highly synchronized routine and maintaining the discipline of a positive demeanor the entirety of a performance. This study observes the factors that make a spirit squad member such as skills of spatial awareness, force velocity in a vertical jump, and maintaining control within their movements. These components are important to analyze and offer possible methods to achieve results that could be beneficial to this population's progress and performance for their current and future endeavors.

PURPOSE & HYPOTHESIS

The purpose of the study was to examine and create profiles and benchmarking of neuromuscular aspects such as reactive hopping and kinesthetic body awareness, and cognitive aspects (spatial awareness, peripheral vision, and dynamic vision) of athleticism for spirit squad athletes.

METHODS

Subjects

RESULTS

CONCLUSIONS & PRACTICAL APPLICATIONS

There were a few cognitive differences in athleticism profiling between SS and non-SS, specifically in the areas of spatial awareness and perception span, with non-SS exhibiting higher neuromuscular qualities, and SS members displaying better body control during movement. These results conclude that implications of specific training stimuli can produce different neuromuscular and cognitive profiles. To be able to quantify an athlete's perceptual skills provides an insight on an athlete's movement patterns which would be beneficial for present and future progress in profiling.

Future research should aim to expand cognitive and neuromuscular profiles and benchmarks for spirit squad teams to improve reactive strength, spatial memory, and kinesthetic body awareness to minimize injury and improve competitive performance, creating an even more competitive field in the future.

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