

# Optimizing Throwing Performance in F11 Athletes: Biomechanical and Psychological Rationale for Reducing Implement Weight

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**Introduction and Purpose:** F11 athletes (completely blind) face unique challenges in throwing events such as javelin, discus, and shot put, as they cannot receive visual feedback and their training differs from other visually impaired Paralympic classes. Standard implement weights, designed for standing or partially sighted athletes, may limit force transmission, motor coordination, and overall performance in F11 athletes. The purpose of this study was to examine the biomechanical and psychological rationale for reducing implement weight in F11 athletes to enhance throwing technique, force transmission, and competitive motivation.

**Methods:** This analytical study was conducted through a literature review and applied biomechanics principles focusing on F11 athletes. The effects of standard versus reduced implement weight on force transmission, motor control, proprioception, as well as confidence and competitive experience were analyzed. Data were evaluated based on scientific evidence and the experience of elite national team coaches to assess both biomechanical and psychological impacts of implement weight adjustments on throwing performance.

**Results:** Analyses indicated that reducing implement weight can improve the efficiency of force transfer from the trunk to the upper limbs and enhance motor control and throwing accuracy. Additionally, lighter implements positively influenced confidence and competitive motivation in F11 athletes, reinforcing successful experiences during training and competition. These findings suggest that adjusting implement weight can provide both biomechanical and psychological benefits for F11 athletes.

**Discussion and Conclusion:** The results of this study indicate that reducing implement weight in F11 athletes can lead to significant improvements in throwing performance. Biomechanically, lighter implements facilitate force transmission from the trunk to the upper limbs and improve coordination and throwing accuracy. Psychologically, reduced implement weight enhances confidence, motivation, and the athlete's sense of success. These findings emphasize that adjusting implement weight is a scientifically and practically justified strategy to enhance performance and promote fair competition among blind athletes. Future studies should empirically evaluate the effects of implement weight reduction in training and competitive settings to fully clarify its impact on competitive performance and technical skill development.

Keyword: F11 Athletes, Javelin Throw, Biomechanics, Psychology, Implement Weight.