順天堂大学大学院スポーツ健康科学研究科
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和文抄録

# 大学生女子ハンマー投選手の投擲飛距離とケトルベル投げとの関連

学籍番号　4123002
氏名　石坂　奨真

【目的】
本研究は大学生女子ハンマー投選手を対象に投擲飛距離と各種ケトルベル投げとの関連を明らかにすることを目的とする.

【方法】
ハンマー投を専門とする，大学生女子ハンマー投選手11名を対象とした．質問紙を用いて被験者の身体特性と自己ベスト，ウエイトトレーニング種目のMaxの回答を得た.また，4kg，6kgのケトルベル投（立ち投，逆投，1回転投，2回転投）の測定をした．測定は3回とし，その中で最も良い記録を採用した．無効試技は回数に含めないものとした.
統計量は中央値（第一四分位数－第三四分位数）で示した．相関を検証するデータに対しては，スピアマンの順位能関係数を用いた．危険率は5%未満をもって有意差ありとした.

【結果】
ケトルベル投げ8種目すべてにおいて投擲飛距離との間に高い正の相関が認められた．ケトルベル投げがハンマー投の競技パフォーマンスを評価する指標として有用である可能性が示された.

【結論】
各種ケトルベル投げの飛距離は女子ハンマー投選手のハンマー投投擲飛距離と有意に関連しており，ケトルベル投げがハンマー投の競技パフォーマンスを評価する指標として有用である可能性が示された．特に，立ち投では，主に爆発的筋力が強く関与し，1回転及び2回転投では主に回転動作を含むハンマー投特有の技術的要素が影響することが示唆された.

# The Relationship Between Hammer-throw Distance and Kettlebell Throwing in Female College Hammer Throw Athletes

Student ID Number: 4123002
Name: ISHIZAKA,Shoma

[Purpose]
The contribution of kettlebell throwing, in which female hammer-throw athletes perform as part of their training, to throwing distance remains unclear. This study aimed to clarify the relationship between kettlebell and hammer-throw distances in female hammer-throw athletes.

[Methods]
This study involved 11 female college hammer-throw athletes. Throwing distances were measured for 4 kg and 6 kg kettlebells using four techniques; standing, handstand, one-turn, and two-turn throws. To monitor the athletes' adaptation to weight, measurements were conducted over two days according to the competition rules of the Japan Association of Athletics Federations. The distance from the landing point of the kettlebell to the nearest point on the circle was measured and extended to the inner edge of the circle. The throw distance was treated as a valid SB (on April 1, 2024).
Spearman's rank correlation coefficient (ρ) was calculated for statistical analysis. A significance level of 5% was used for all tests and differences were considered statistically significant.

[Results]
High positive correlations were found between the throwing distances of all eight kettlebell throwing techniques and hammer-throw distances. This suggests that kettlebell throwing is a useful indicator of hammer-throw performance.

[Conclusion]
The throwing distances for various kettlebell throwing techniques were significantly related to the hammer-throw distances of the female hammer-throw athletes, indicating that kettlebell throwing is a useful tool for evaluating hammer throw performance. Specifically, standing throws mainly involved explosive strength, whereas one- and two-turn throws were influenced by rotational movements and technical elements specific to hammer-throwing.
Since various kettlebell throws do not depend on the maximum weight
lifted during weight training, they were considered to be suitable exercises for learning the technical elements of the hammer throw using the unique turning.