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Comparison of 2 Alternative Systems for Measuring Vertical Jump Height

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Abstract

Muscular power is an important component of most athletic events. A common procedure to assess lower body power is the standing jump and reach test. However, the traditional standing vertical jump test may not be appropriate for sports like basketball and volleyball. **PURPOSE:** To compare 2 different vertical jump measurement devices during an approach vertical jump. **METHODS:** A convenience sample of 37 college students (15 males and 22 females; mean age 20.1 ± 2.1 years), volunteered to participate in this study. The approach vertical jump heights were determined simultaneously by 2 devices (G-Vert™ device, and the Vertec™). The G-Vert™ device was worn in an elastic belt positioned at waist level during each jump attempt. The subjects completed a brief, dynamic warm-up prior to performing the approach vertical jumps. Each subject was allowed 2 submaximal effort practice jumps prior to performing 5 maximum effort vertical jumps. The subjects were allowed to choose the approach length, however, the actual jump required a two-foot take-off. After each jump, both measurements were recorded. Each subject completed a 2nd series of 5 jumps 2-7 days after the first testing session. Vertical jump height was calculated by subtracting reach height from the jump height as measured by the Vertec™. The protocol for the 2nd day was exactly the same as the first day. A paired t-test was used to determine differences between vertical jump heights between the 2 measurement devices. Significance was defined as $p < .05$ for all statistical calculations. **RESULTS:** There was a statistically significant difference in vertical jump heights measured between the 2 devices (Vertec™: 20.9 ± 4.9 in.; G-Vert™: 21.5 ± 4.4 in.; $p < 0.001$). **CONCLUSION:** Although the results of this study indicated that the G-Vert™ device recorded average values approximately 0.5 inch higher than the Vertec™, the jump heights were basically the same. **PRACTICAL APPLICATION:** Based on these results, either of the devices would provide an adequate measure of an approach vertical jump height. In addition, these devices allow for the ability to assess vertical jump height with sports-related movements.

Introduction

Muscular power is an important component of most athletic events. A common procedure to assess lower body power is the standing jump and reach test. However, the traditional standing vertical jump test may not be appropriate for sports like basketball and volleyball.

Purpose

To compare 2 different vertical jump measurement devices during an approach vertical jump.

Methods

Subjects

A convenience sample of 15 males and 22 females volunteered to participate in this study (see Table 1). The volunteers read and signed an informed consent form and had the opportunity to ask any questions prior to participating in the study. The Dakota State University Institutional Review Board approved this study.

Procedures

The approach vertical jump heights were determined simultaneously by 2 devices (G-Vert™ device, and the Vertec™). The G-Vert™ device was worn in an elastic belt positioned at waist level during each jump attempt (as recommended by manufacturer). The subjects completed a brief, dynamic warm-up prior to performing the approach vertical jumps. Each subject was allowed 2 submaximal effort practice jumps prior to performing 5 maximum effort vertical jumps. The subjects were allowed to choose the approach length, however, the actual jump required a two-foot take-off. The jump height data from the G-Vert™ device was transmitted on the Vert ™ app on an iPhone via Bluetooth. After each jump, both measurements were recorded. Each subject completed a 2nd series of 5 jumps 2-7 days after the first testing session. Vertec™ vertical jump height was calculated by subtracting reach height from the jump height. The protocol for the 2nd day was exactly the same as the first day.

Data analysis

A paired t-test was used to determine differences between vertical jump heights between the 2 measurement devices. Significance was defined as $p < .05$ for all statistical calculations.

Table 1. Demographic Information

Gender	N	Age (yrs)	Ht (in.)	Wt (lbs.)
Males	15	21.0 ± 2.5	72.3 ± 2.2	215.6 ± 57.1
Females	22	19.4 ± 1.5	68.2 ± 3.0	150.6 ± 16.6

Results

The results of the study revealed a statistically significant difference in vertical jump heights measured between the 2 devices (see Table 2).

Table 2. Approach Jump Results

Device	Ht (in.)
Vertec	20.9 ± 4.9
G-Vert	21.5 ± 4.4*

Note - * $p < 0.0001$

Conclusion

Although the results of this study indicated that the G-Vert™ device recorded average values approximately 0.5 inch higher than the Vertec™, the jump heights were basically the same.

Practical application

Based on these results, either of the devices would provide an adequate measure of an approach vertical jump height. In addition, these devices allow for the ability to assess vertical jump height with sports-related movements.

College of Education