Ankle Laxity and Self-Reported Function in Individuals With Chronic Ankle Instability

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Source:
Hubbard-Turner T. Relationship between mechanical ankle joint laxity and subjective function. Foot Ankle Int. 2012;33(10):852-856.1

Following an acute lateral ankle sprain, nearly half of all patients develop chronic ankle instability (CAI),2 which is characterized by “giving way” episodes and recurrent sprains. Because individuals with CAI experience increased ankle joint laxity,3 as well as decreased self-reported function,4,5 there is a need to better understand the relationship between an increase in laxity and functional limitations. The purposes of this review are to present the findings of a relevant cross-sectional study1 and to provide clinical commentary about the relationship between mechanical laxity and self-reported function.

Study Purpose
Hubbard-Turner1 used a cross-sectional design to examine the relationship between instrumented measures of mechanical ankle ligament laxity and self-reported function. The Foot and Ankle Disability Index (FADI) and the Foot and Ankle Disability Index-Sport (FADI-S) were used to quantify self-reported ankle function in individuals with CAI.

Summary of Methods
This investigation1 included 120 subjects with unilateral CAI. All subjects reported a history of unilateral ankle sprain, frequent “giving way” episodes, pain, instability, and decreased function. Subjects who had sustained an acute ankle sprain within the previous 6 weeks, a history of surgery or fracture to either lower extremity limb, or an ankle sprain to the contralateral limb were excluded. The participants completed the 2 self-reported function surveys and underwent ankle joint stability testing in one data collection session.

Region-specific survey instruments, such as the FADI and FADI-S, address the effects in laxity and functional limitations. The purposes of this review are to present the findings of a relevant cross-sectional study1 and to provide clinical commentary about the relationship between mechanical laxity and self-reported function.
of injury on a specific joint or body part. The FADI is a 26-item survey that assesses self-reported function related to activities of daily living. The FADI-S is an 8-item survey that assesses self-reported function related to sport activities. Both sets of survey responses are scored as a proportion of the maximum possible score, with a score of 100 representing normal function. Both the FADI and FADI-S have been shown to be reliable measures for quantification of self-reported functional limitations in individuals with CAI.

One examiner measured mechanical laxity of both ankles with an ankle arthrometer (Blue Bay Research Inc., Navarre, FL). The order of testing was randomly determined and the examiner was blinded to the status of an ankle. A load of 125 N was applied for anteroposterior (AP) testing and 4000 N-mm of torque was generated for inversion-eversion (I-E) testing. Translational laxity was defined as the total AP displacement in millimeters between the foot and leg segments and excessive rotation within the frontal plane was defined by total I-E amplitude in degrees.

Relevance of Study Findings

Anterior laxity was found to have a moderate inverse correlation to FADI score (r = -0.65) and a strong inverse correlation to FADI-S score (r = -0.88), which indicated that translational laxity was associated with decreased self-reported function. A moderate inverse correlation was identified between inversion rotation rotary displacement and both FADI score (r = -0.53) and FADI-S score (r = -0.45). Posterior displacement and eversion rotation were not significantly correlated to either measure of self-reported ankle function. The study’s findings suggest that mechanical ankle laxity may contribute to self-reported functional limitations in individuals with CAI.

Relevance to Clinical Practice

Previous research has documented the existence of mechanical ankle instability in individuals with CAI, as well as self-reported functional limitations. The Hubbard-Turner study results provide evidence that a relationship exists between ankle laxity and self-reported function in a large sample of individuals with CAI. These findings indicate that ankle joint laxity is associated with lower levels of self-reported ankle function. Clinicians should take this relationship into consideration when treating patients who have sustained an ankle sprain, particularly when developing therapeutic goals and making return-to-play decisions.

The Hubbard-Turner findings suggest that emphasis should be placed on restoration of joint stability following an acute ankle sprain. Clinicians should stress the importance of joint protection when educating patients. Previous research has demonstrated that a period of at least 6 weeks is required for ligament healing, but many athletes return to play in as few as 3 days after having sustained an ankle sprain. For long-term ankle sprain management, taping or bracing could improve joint stability. Although taping and bracing appear to improve ankle stability and reduce the number of recurrent ankle sprains, their long-term contribution to improvement in self-reported ankle function is unknown.

The Hubbard-Turner study provides new knowledge about the relationship between mechanical laxity and self-reported function, but ligament laxity is only one of several factors believed to contribute to the development of CAI. Other factors may include range of motion restrictions, strength deficits, impaired postural control, and altered proprioception. Future identification of combinations of factors that contribute to improvements in self-reported ankle function may guide development of improved treatment strategies. Assessment of the possible relationship between mechanical laxity and self-reported general health status (Short-Form 36) may provide additional insights. Further research is needed to better understand the importance of ankle joint stability to the maintenance of a physically active lifestyle.

References