

## [ Athletic Training ]

# Clinician Recommendations and Perceptions of Factors Associated With Ankle Brace Use

Jason M. Denton, PT, DPT, MS,\*<sup>†</sup> Andrew Waldhelm, PT, PhD, LAT, CSCS,<sup>†</sup>  
Jonathon D. Hacke, PT, MA, OCS, ATC,<sup>‡</sup> and Michael T. Gross, PT, PhD, FAPTA<sup>§</sup>

**Background:** Little information is available regarding the ankle braces orthopaedic sports medicine clinicians recommend or clinicians' concerns that may influence their decisions to recommend use of an ankle brace.

**Hypotheses:** (1) Clinicians most frequently recommend lace-up braces with straps. (2) Clinicians who are concerned about potential adverse side effects from ankle brace use are less likely to recommend an ankle brace to prevent ankle sprain injuries.

**Study Design:** Descriptive survey study.

**Level of Evidence:** Level 3.

**Methods:** Surveys were sent via e-mail to 1000 randomly selected members of the Orthopaedic Section of the American Physical Therapy Association (APTA) and 1000 randomly selected members of the National Athletic Trainers' Association (NATA). A total of 377 individuals responded to the survey.

**Results:** Lace-up braces, specifically lace-up braces with straps, were the most frequently recommended type of ankle brace. Regression analyses indicated that the only perceived adverse side effect significantly related to frequency of ankle brace recommendation was a potential negative influence on ankle strength.

**Conclusion:** Based on our sample, clinicians recommend lace-up ankle braces with straps most frequently to prevent ankle sprain injuries. Clinicians who are concerned about weakness of ankle musculature may be less likely to recommend use of an ankle brace.

**Clinical Relevance:** Clinicians may effectively reduce the number of ankle sprain injuries by recommending an ankle brace use after an initial ankle sprain injury.

**Keywords:** ankle sprain; ankle bracing; prevention; clinician recommendation

Ankle sprain injuries are common during sporting activities.<sup>1,9,10,16</sup> The risk for additional ankle sprain injury increases after the initial injury.<sup>14,17</sup> Multiple studies indicate that wearing an ankle brace can reduce the incidence of ankle sprains in sporting activities such as football,<sup>8</sup> basketball,<sup>7,14</sup> volleyball,<sup>4,11</sup> and soccer.<sup>13-15</sup> The reduction in the incidence of ankle sprain injuries has been demonstrated for

lace-up braces,<sup>12,13</sup> semirigid ankle braces,<sup>14,15</sup> and rigid braces.<sup>4,11</sup> Two recent studies describe a reduced incidence of ankle sprains for individuals who wore a lace-up brace with straps.<sup>7,8</sup> While more recent studies have included multiple brace types, studies examining recovery from acute ankle sprain that include ankle bracing as part of the management typically use a semirigid ankle brace.<sup>2,5,6</sup>

From <sup>†</sup>School of Physical Therapy, University of the Incarnate Word, San Antonio, Texas, <sup>‡</sup>Division of Physical Therapy at the University of North Carolina at Chapel Hill, Chapel Hill, North Carolina, and <sup>§</sup>Program in Human Movement Science, Division of Physical Therapy at the University of North Carolina at Chapel Hill, Chapel Hill, North Carolina

\*Address correspondence to Jason M. Denton, PT, DPT, MS, School of Physical Therapy, University of the Incarnate Word, 4301 Broadway, CPO 412, San Antonio, TX 78209 (e-mail: jmdenton@uiwtx.edu).

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Table 1. Number of clinicians who identified brace as the most frequently recommended

Brace <sup>a</sup>	n	Percentage
Lace-up braces with straps	116	41
Ankle Stabilizing Orthosis (ASO)	102	36
RocketSoc	14	5
Lace-up (subtype not specified)		
McDavid Sports Medical Products lace-up	36	13
Rigid braces	35	12
T2 Active Ankle Support	28	10
Universal Ankle Stirrup	7	2
Lace-up brace		
Swede-O Ankle LoK	27	10
Semi-rigid brace		
Aircast Air-Stirrup (Aircast)	26	9

<sup>a</sup>All other braces selected by  $\leq 2\%$  of respondents.

The purposes of this study were to address the following research questions: (1) Which ankle brace do clinicians recommend most frequently to prevent ankle sprain injuries? (2) Is ankle brace recommendation related to clinicians' concerns about potential side effects?

## METHODS

### Data Collection

The study was approved by the Biomedical Institutional Review Board at the University of North Carolina at Chapel Hill. The survey instrument was formatted based on the Total Design Method by Dillman.<sup>3</sup> The initial survey was piloted with 10 local clinicians and faculty in the University of North Carolina–Chapel Hill Movement Science Program. Participant feedback was implemented into the final survey, which was used for this study. An initial e-mail with a link to the survey website was sent inviting subjects to participate in the survey. Informed consent was obtained on the first page of the survey. A follow-up e-mail was sent to all subjects after 2 weeks if they had not participated.

### Survey Sample

The e-mail invitation to participate in the survey was sent to 1000 randomly selected members of the National Athletic Trainers' Association (NATA) and 1000 randomly selected members from the Orthopaedic Section of the American Physical Therapy Association (APTA). A total of 377 subjects responded to some portion of the survey, for a response rate of

20.2%. The survey is provided in Appendix 1 (available at <http://sph.sagepub.com/content/by/supplemental-data>).

### Data Analysis

Descriptive statistics were used to analyze which ankle braces clinicians recommended most frequently to prevent ankle sprain injuries, while multivariate regression analyses were employed to answer whether ankle brace recommendations were related to clinicians' concerns about potential side effects. The independent variables included clinicians' concerns for the following potential side effects of using an ankle brace: reduced strength, compromised proprioception, compromised dynamic balance, and risk of injury to the knee joint.

## RESULTS

Descriptive statistics of the survey participants are provided in Appendix 2 (available at <http://sph.sagepub.com/content/by/supplemental-data>). Overall, clinicians recommended an ankle brace to individuals with recurrent ankle sprains more than patients with an initial ankle sprain (64.1% to 48.1%). Preliminary data analysis indicated that professional status (athletic trainers [ATs], physical therapists [PTs], both) was highly correlated with the percentage of patients for whom clinicians recommended use of an ankle brace. Lace-up braces with straps were recommended by more clinicians than any other brace type (Table 1). The top 5 braces by estimated frequency of recommendation are listed in Table 2.

Table 2. Frequency of recommendation for 5 most frequently recommended braces

Brace	No. of Times Brace Recommended in Past 12 Months <sup>a</sup>					
	51+	26-50	16-25	11-15	6-10	1-5
Ankle Stabilizing Orthosis (lace-up with straps)	10	12	19	19	25	41
T2 Active Ankle Support (rigid brace)	4	4	4	5	10	36
McDavid (lace-up subtype not specified)	3	2	5	4	17	48
Swede-O Ankle LoK (lace-up)	2	2	4	6	13	48
Aircast Air-Stirrup (semirigid brace)	2	0	2	6	15	54

<sup>a</sup>Entries in each column indicate the number of clinicians who have recommended the corresponding braces at the indicated frequency.

Clinicians reported concern about each of the side effect variables, but only the side effect of reduced ankle strength was significantly related to the percentage of patients for whom clinicians recommended an ankle brace ( $P < 0.05$ ). Clinicians' concerns about compromised ankle joint proprioception, compromised dynamic balance, and risk of injury to knee joint structures were not significantly related to whether clinicians recommended an ankle brace after an initial ankle sprain ( $P > 0.05$ ). None of the factors were related to recommendation frequency after a recurrent ankle sprain ( $P > 0.05$ , all tests).

## DISCUSSION

A reduction of ankle sprain injuries using the lace-up with straps brace type has been established.<sup>7,8</sup> Clinicians who were concerned about reduced ankle musculature strength were less likely to recommend an ankle brace to patients after an initial ankle sprain. Insufficient evidence exists in the literature to support or dismiss clinicians' concerns about potential reductions in ankle muscle strength. The bulk of the literature indicates that an individual with 1 or more ankle sprains is at greater risk for a subsequent ankle sprain compared with individuals without a history of ankle sprain injury.<sup>9,14,16</sup>

Because of the low response rate (20.2%), the findings of this study may not be generalizable to all ATs and PTs. Another limitation is that the term *ankle sprain* was not defined within the survey. The potential reduction in strength on wearing an ankle brace long term requires investigation.

## CONCLUSION

Lace-up braces with straps were recommended by a considerable number of clinicians. Clinicians were concerned about a reduction in ankle muscle strength from ankle brace use and were less likely to recommend ankle braces to patients after an initial ankle sprain.

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