The effect of night splints in the treatment of plantar fasciitis: a systematic literature review

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The effect of night splints in the treatment of plantar fasciitis: a systematic literature review

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Background

- Plantar fasciitis occurs in more than 2M Americans each year and is the most common cause of acute heel pain.1
- Night splints are one conservative intervention that is available to patients affected by plantar fasciitis, but there is limited evidence on their effectiveness.

To our knowledge, this is the first review to evaluate the efficacy of night splints.

Objective

To investigate the use of night splints for the treatment of plantar fasciitis and the current evidence regarding their ability to affect symptoms associated with plantar fasciitis.

Methods

Article selection process:

- Databases: CINAHL, PubMed, Cochrane, PEDro, Scopus, Sport Discuss, and Ovid-Medline
- Search Terms: plantar fasciitis, physical therapy, night splints. All three search terms were combined with “AND
- Evaluation: The GRADE approach was used to evaluate the quality of each paper.

Results

Six papers that met the established inclusion and exclusion criteria were included in this systematic review. Four papers were observational and two papers were randomized controlled trials. The evidence ranged from high to very low quality. The recommendation for use of night splints was weak in all six papers.

<table>
<thead>
<tr>
<th>Author(s)</th>
<th>Year Published</th>
<th>Number of Subjects</th>
<th>Age Range</th>
<th>Men/Non-Men</th>
<th>Intervention</th>
<th>Length of Randomization</th>
<th>Outcome Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lee et al.</td>
<td>2012</td>
<td>20 (20/20)</td>
<td>Group A: 45 (45)</td>
<td>Group B: Acupuncture &amp; night splinting &amp; exercise in plantar fasciitis</td>
<td>6 weeks</td>
<td>Foot Function Index (FFI) questionnaire</td>
<td>Outcome not statistically significant</td>
</tr>
<tr>
<td>Rogers et al.</td>
<td>2013</td>
<td>15 (15/14)</td>
<td>20-67</td>
<td>51</td>
<td>Acupuncture, orthotic &amp; dorsiflexion night splint in plantar fasciitis</td>
<td>12 weeks</td>
<td>Foot and Ankle Outcome Measure (FAOS)</td>
</tr>
<tr>
<td>Rogers et al.</td>
<td>2010</td>
<td>60</td>
<td>Group A: Acupuncture &amp; dorsiflexion night splinting &amp; exercise in plantar fasciitis</td>
<td>12 weeks</td>
<td>Modified Activities Scale (MARS)</td>
<td>Outcome not statistically significant</td>
<td></td>
</tr>
<tr>
<td>Sheridan et al.</td>
<td>2010</td>
<td>40 (40/40)</td>
<td>Group A: Acupuncture &amp; dorsiflexion night splinting &amp; exercise in plantar fasciitis</td>
<td>52 weeks</td>
<td>Foot and Ankle Outcome Measure (FAOS)</td>
<td>Outcome not statistically significant</td>
<td></td>
</tr>
<tr>
<td>Sheridan et al.</td>
<td>2007</td>
<td>20 (20/20)</td>
<td>Group A: Acupuncture &amp; dorsiflexion night splinting &amp; exercise in plantar fasciitis</td>
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<td>52 weeks</td>
<td>Foot and Ankle Outcome Measure (FAOS)</td>
<td>Outcome not statistically significant</td>
<td></td>
</tr>
</tbody>
</table>

Discussion

The evidence presented in this systematic review included six papers that implemented one of four types of night splints: posterior,4,6,8 anterior,1,11 sock-type or Dynamix® (Severna Park, MD). From the available evidence, it is suggested that night splints may be helpful in treating the common symptoms of plantar fasciitis.

- Two papers discussed in this review used posterior-tension splints to maintain ankle dorsiflexion and toe extension.2,3
- Loggie et al. focused on the use of autogenous blood injection in a subject with calf spasticity, which prevented a definitive interpretation on the effectiveness of posterior night splints.11
- Beynnon et al. suggested that the use of posterior night splints has no significant effect on the long-term recurrence of symptoms.4
- One paper investigated the use of anterior tension splints.7
- Ross et al. suggested that patient compliance in wearing anterior night splints is better than for posterior splints because the plantar spinct may need to be removed for walking and is generally more comfortable due to better heat dissipation.
- One paper compared the use of anterior and posterior night splints.4
- Attard et al. reported that the use of anterior night splints led to decreased sleep disturbances and was consequently better tolerated by the subjects.
- One paper investigated a sock-type night splint.6
- Summary of Findings

- Two RCTs
- Four observational studies
- Short follow-ups

Limitations

- Papers written in English
- Published from June 2005 to June 2015
- Patients were at least 18 years old
- No prior surgical interventions

Conclusions

The available evidence suggests that night splints may be helpful in treating the common symptoms of plantar fasciitis, with anterior splints being better tolerated than posterior splints.

Future Research

- More consistent ankle positions
- Most effective ankle positions (neutral plantigrade vs. dorsiflexion)
- Long-term effects of splinting
- Longer follow-up studies
- Larger sample sizes
- More RCTs
- Use of functional outcome measures
- Insight into patients’ activity levels
- More diverse population in regards to BMI

References


Flow diagram for article identification, review, and selection

- Citations identified through database searches (n=99)
- Duplicates removed (n=44)
- Title and abstract reviewed (n=55)
- Relevant papers included in systematic review (n=6)
- Added from hand-searching the reference sections of the 55 papers (n=5)

Citations identified through database searches (n=99)

Title and abstract reviewed (n=55)

Removed based on inclusion and exclusion criteria (n=54)

Added from hand-searching the reference sections of the 55 papers (n=5)