

Introduction

Background: Patellofemoral pain (PFP) is a common cause of anterior knee pain with a prevalence in the general population of 25-40%.^{1,2} PFP is an overuse condition that can lead to increased pain with activities like running, stair-climbing, or squatting.³ Knee brace designs including sleeves and straps have been utilized for PFP with mixed results.⁴ Current clinical practice guidelines do not recommend bracing for PFP because of lack of evidence to support its use.⁴ A new brace, called the NuNee, provides a distraction force to the patella while allowing full participation in functional activities.⁵

Purpose: To determine the immediate effects that donning the NuNee brace has on patient reported pain during functional activities.

Hypothesis: Less anterior knee pain will be reported during functional activities while wearing the NuNee Brace compared to without wearing the NuNee brace.

Methods

Participants were screened for anterior knee pain using a standardized musculoskeletal exam to rule out causes of knee pain that would exclude participation. 28 out of 30 participants qualified. The participants identified their current level of knee pain on an 11-point (0-10) Numerical Rating Scale (NRS). One of the following functional tests: stair negotiation, squat, or running was completed by the participants based on which was identified by the participants as most provocative. The functional test was completed without the brace, then with the brace properly applied per the manufacturer's instructions. Participants reported their pain rating using the NRS during the functional test with and without the brace to identify the immediate response to use of the brace.

Results

Table 1: Demographics of volunteer participants

	Age (years)	Gender	BMI	Symptom Duration
N=28	18 - 60	17 female	17.1-34.2	0.5-10 years
	Ave 26.21	11 male	Ave 24.41	Ave 4.51
	SD 12.84		SD 4.10	SD 3.31

Table 2: Pain reported with provocative activity with and without the application of NuNee brace

	Mean	SD	Confidence Interval (95%)	P Value
Without Brace	3.54	1.96	(2.80, 4.30)	<0.001
With Brace	1.58	1.84	(0.88, 2.28)	

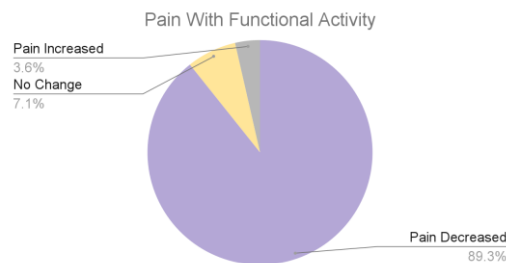


Figure 1: Participant pain response with provocative activity with application of NuNee brace.

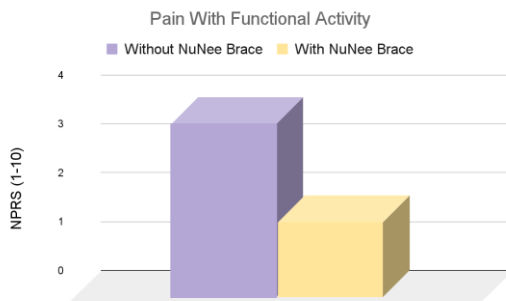


Figure 2: Average pain reported during provocative activity among participants with and without the application of NuNee brace

Discussion

When engaging in provocative activity, 25 participants reported improvement in pain while wearing the NuNee brace compared to the same activity without the brace (Figure 1). Improvement was defined as a reduction of 1 point on the NPRS scale.⁷ Results show a statistically significant decrease in average reported pain during functional activity with the brace (Table 2). An average decrease of .82 in pain was noted at rest after donning the brace, although the results were not statistically significant ($p=.09$). The results of the current study support that the NuNee brace decreases immediate pain with provocative functional activity.

Clinical Importance

The NuNee brace may decrease pain during functional activities for individuals that struggle with anterior knee pain. Future areas of research include: combination of bracing with current standard of care, comparison of compression braces with NuNee brace, and long term implications of the use of a distraction brace.

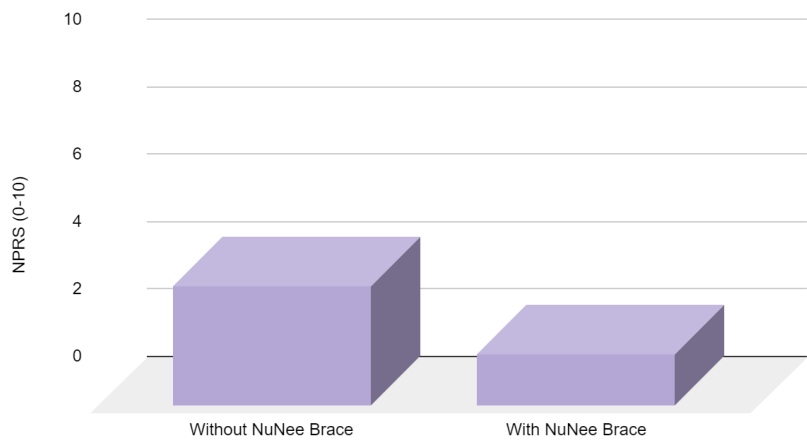
Limitations

This study has limited power and external validity secondary to its small sample size and decreased demographic variability among participants. There is increased bias due to the lack of a control group.

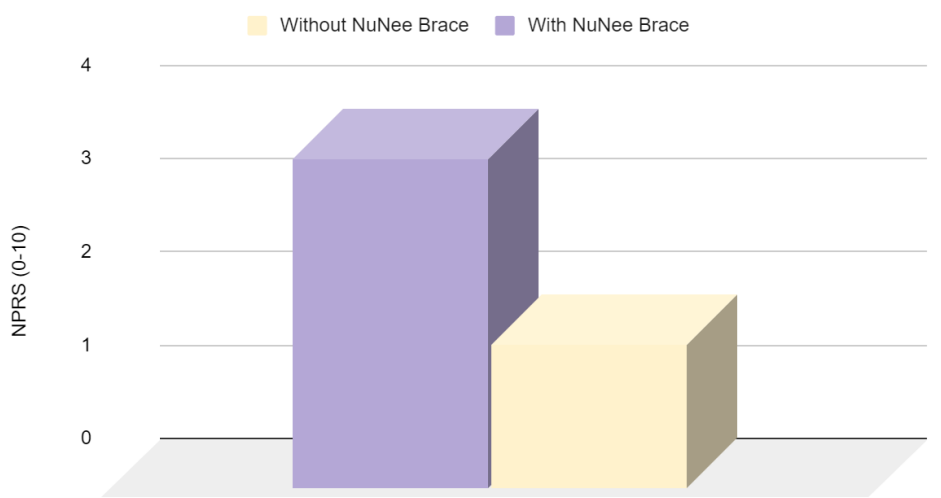
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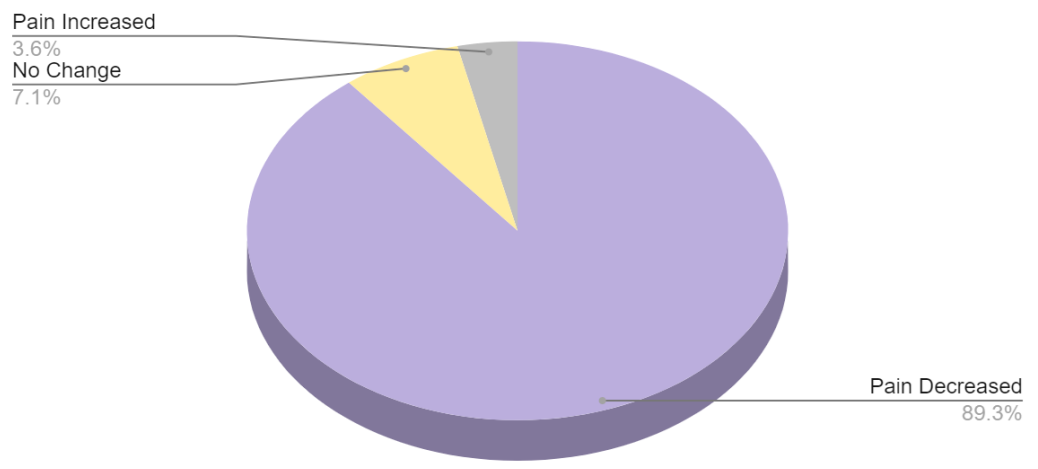
Pain With Functional Activity



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