

# Quality of Life After Lower Extremity Amputation Using Incisional Negative Pressure Wound Therapy: A Prospective Randomized Controlled Trial

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## Introduction

- Lower extremity amputation (LEA) is a devastating event with a decrease in quality of life after amputation and overall lower quality of life compared to the general population.<sup>1</sup>
- The ability to ambulate after lower extremity amputation is positively correlated with quality of life.<sup>2,3,4</sup> Those who used a prosthesis after LEA showed an improved health-related physical quality of life (HRQOL) in comparison to those who did not use a prosthesis.<sup>1</sup>
- Incisional negative pressure wound therapy (iNPWT) has been shown to reduce complication rates and time to prosthesis after amputation, improving functional independence.<sup>5</sup>
- The purpose of this study is to analyze the impact of iNPWT on health-related physical and mental quality of life after non-traumatic lower extremity amputations in comparison to standard dry dressing.

## Methods

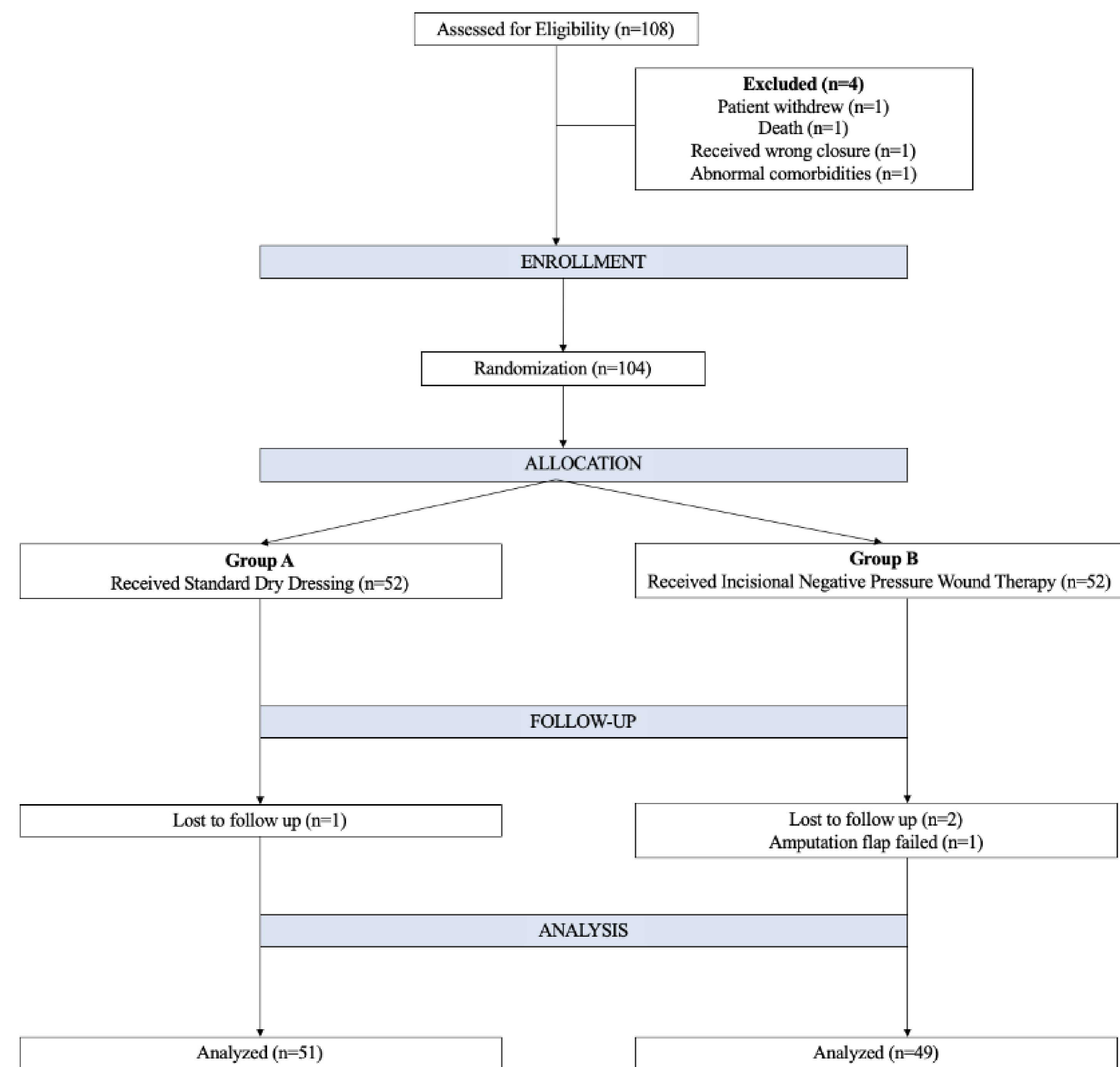


Fig. 1. Randomization Procedure

- Patients indicated for non-traumatic BKA presenting to a high-volume wound center were randomized to receive iNPWT (3M-Prevena, Ireland) or a standard dry dressing over their incision at the conclusion of BKA.
- SF-12 survey given at entry (before amputation) and exit (90 days post-op)

## Results

- 108 eligible patients undergoing LEA were randomized to either the iNPWT or standard dry dressing group. 8 patients were lost to follow-up.

### Physical Component Summary (PCS-12)

- When comparing the dry dressing and iNPWT groups, there was no significant difference in the PCS-12 entry ( $p=.338$ ) or exit ( $p=.264$ ) scores (Figure 2).
- When comparing the PCS-12 entry and exit scores, the dry dressing group decreased  $2.44 \pm 2.28$  points ( $28.08 \pm 7.96$  to  $25.64 \pm 9.64$ ). The PCS-12 score for the iNPWT group increased  $1.76 \pm 1.64$  ( $26.56 \pm 6.12$  to  $28.32 \pm 11.2$ ). When comparing the dry dressing and iNPWT groups, there was a significant difference in the change in PCS-12 score ( $p=.043$ ) (Figure 3).

### Mental Component Summary (MCS)

- When comparing the dry dressing and iNPWT groups, there was no significant difference in the MCS-12 entry scores ( $p=.46$ ), MCS-12 exit scores ( $p=.76$ ) or change in MCS-12 score ( $p=.46$ ) (Figures 2 and 3).

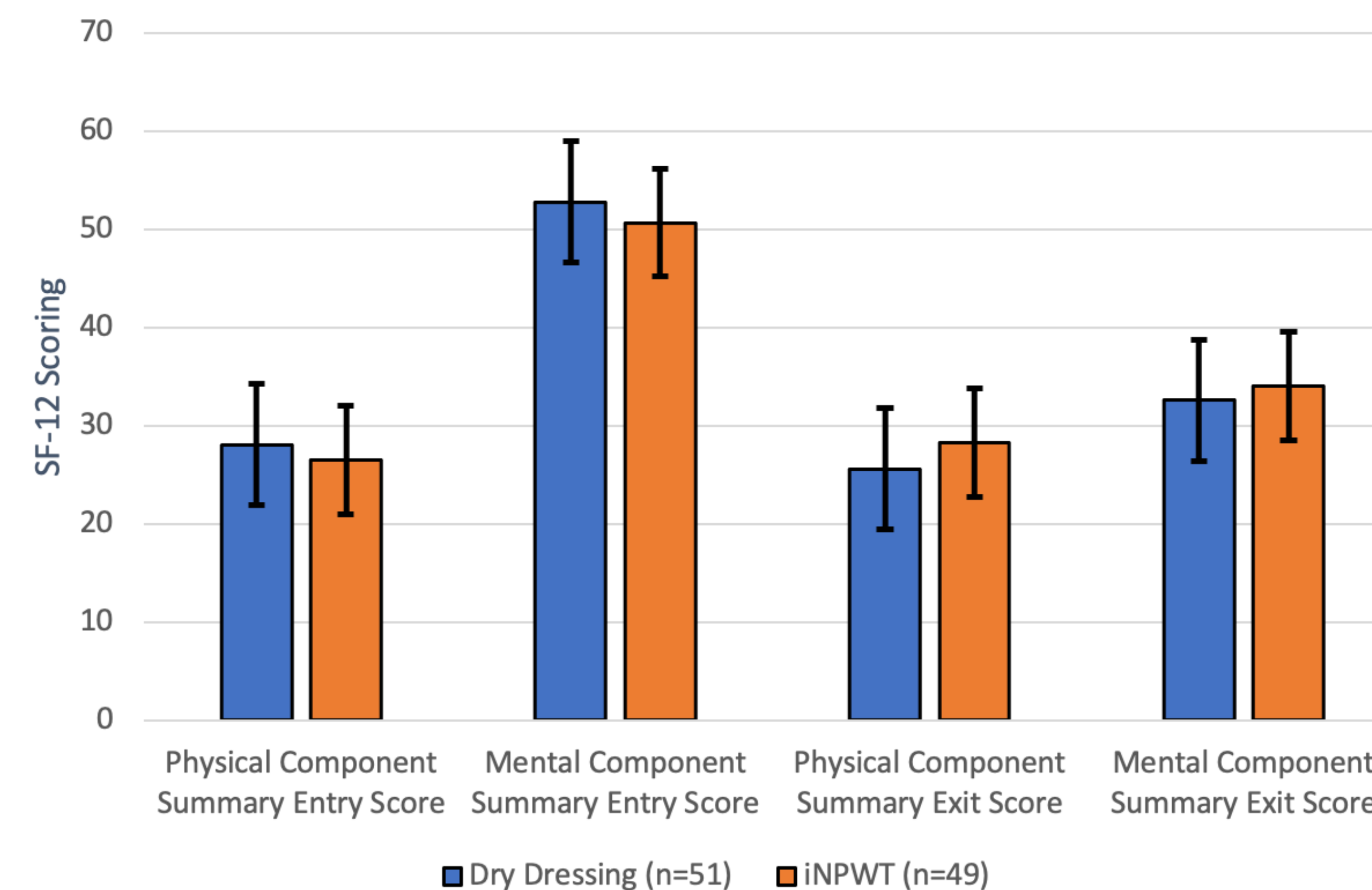


Fig. 2. Comparing the PCS and MCS entry and exit scores between the dry dressing and iNPWT groups

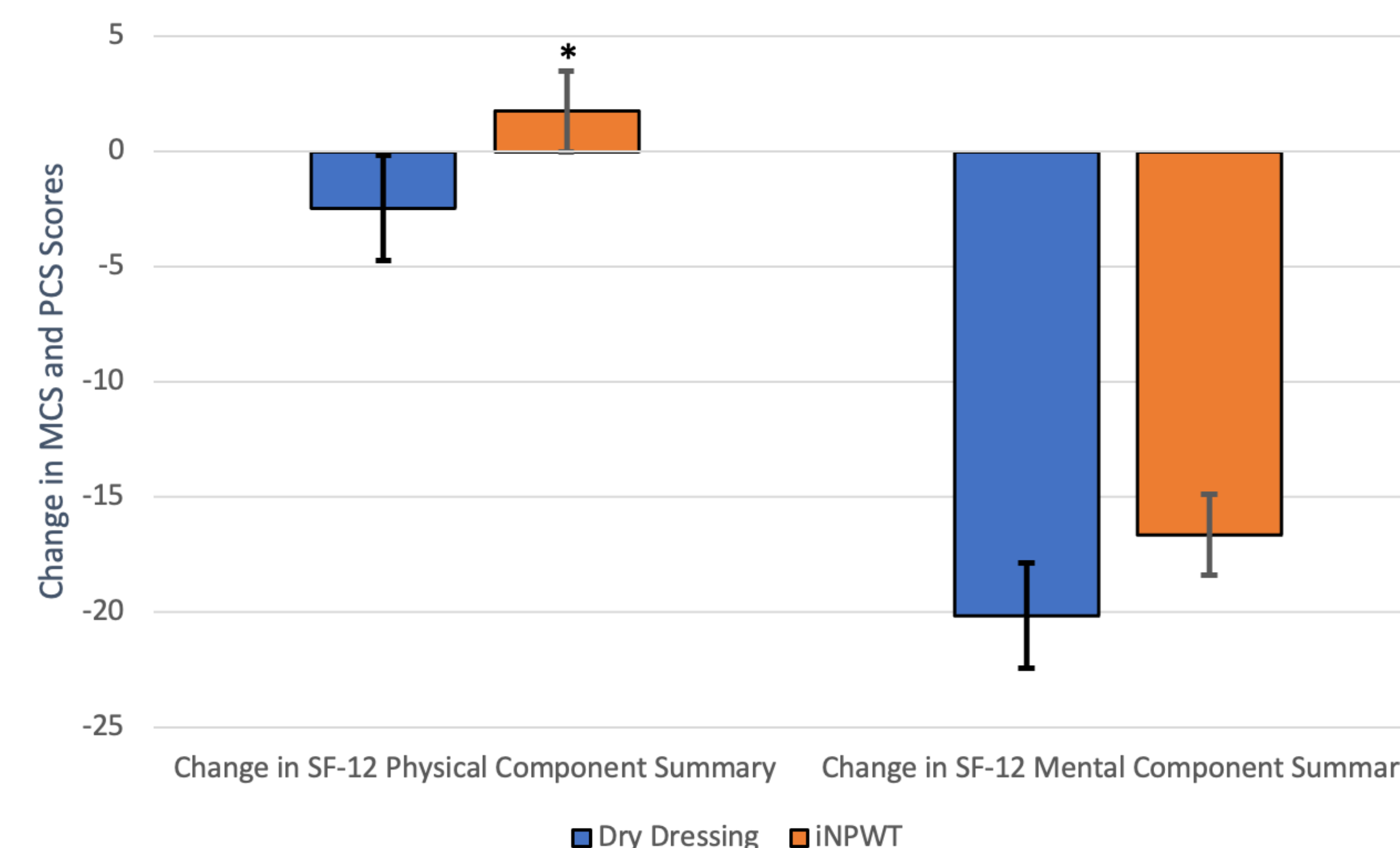


Fig. 3. Comparing the change in PCS and MCS between the dry dressing and iNPWT groups

## Discussion

- There was a significant difference in the change in PCS-12 between the two groups: after amputation the iNPWT group had an increase in PCS-12 while the standard dry dressing group had a decrease in PCS-12.
- There was no difference in change in MCS-12 between the two groups.
- The iNPWT group likely has an increase in PCS-12 due to the shorter time to prosthesis and faster time to ambulation, which previous studies have found is positively correlated to a higher quality of life.<sup>4,5</sup>
- iNPWT should be considered as a healing aid for high-risk patients undergoing a life-changing operation like LEA so that they can more rapidly heal, ambulate independently with a prosthesis. Doing so could improve their quality of life.

## Conclusions

- Among patients undergoing a non-traumatic lower extremity amputation, those who received incisional negative pressure wound therapy experience a significantly greater increase in the physical component summary of health-related quality of life compared to the standard dry dressing group.
- Prior studies suggest that utilizing iNPWT results in lesser complication rates and time to prosthesis after LEA, resulting in faster time to ambulation and therefore greater physical quality of life.

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