



“Just do your best to stay off it”: A look at the ability of orthopaedic trauma patients to comply with non weight bearing instructions.

Heather C. Flynn MD¹, Saqib Rehman MD¹, Frederick Ramsey PhD², Britt Hankins BS³, D’Andrew Gurseley BS³

¹Temple University Hospital, Department of Orthopaedic Surgery & Sports Medicine, Philadelphia PA, ² Lewis Katz School of Medicine, Department Of Clinical Sciences, Philadelphia PA, ³ Lewis Katz School of Medicine, Philadelphia PA

BACKGROUND

Patients are commonly prescribed a weight bearing status when leaving the hospital following lower extremity procedures for traumatic orthopaedic injuries. Early weight bearing following surgery has been demonstrated to have many benefits, ranging from biomechanical advantages to improved quality of life. Cyclical loading and axial compression that occurs at the fracture site during ambulation stimulates bony healing (1, 2, 3), and patients typically report improved quality of life and level of function scores when they are permitted to weight bear as tolerated following surgery rather than having to navigate ambulating with crutches or a walker (4,5).

Despite recent advances in our understanding of which fracture patterns may be permitted to bear weight early after surgery, there are still a number of factors that may influence surgeons to recommend a more prolonged non-weight bearing course to their patients following surgery. Restricted weight bearing following surgery is thought to decrease the forces at the fracture site and the hardware, thereby protecting the anatomic alignment achieved during surgery and decreasing the risk of implant failure or fracture malunion occurring prior to bony healing. Factors such as poor bone quality, type of fracture, degree of fracture comminution, presence of medical comorbidities, and age of patient might all influence surgeons to recommend a period of non-weight bearing prior to allowing patients to walk on their lower extremity after an orthopaedic procedure (6).

Studies that have investigated the ability of patients to comply with postoperative non-weightbearing or partial weight bearing instructions suggest that patient compliance is often poor (7,8,9,10). A recent study that examined patient compliance with strict non-weight bearing instructions following foot and ankle surgery by embedding pressure-sensitive film into short leg casts found that the noncompliance rate was 27.5%; they did not note any increased complication rates in this group compared to the rest of their cohort (11). The concern for patients who are unable to comply with postoperative non-weight bearing instructions is they may expose themselves to increased rates of complications such as implant failure leading to malunion, nonunion, refracture, and increased need for reoperation (12).

The purpose of this study was to examine the self-reported rates of noncompliance with strict non weight bearing (NWB) instructions in a population of orthopaedic trauma patients.

Another goal of the study was to better understand patient characteristics and challenges in the home environment that might lead to increased difficulty with adhering to NWB instructions.

METHODS

Survey administration

A ten question multiple choice survey was administered to patients in person in the orthopaedic trauma clinic between the months of August 2020 and February 2021. Patients were qualified for the survey if they had a lower extremity injury (treated operatively or nonoperatively) for which they were prescribed a non weight bearing course of 8 weeks or longer.

Exclusion criteria

Patients were excluded from participating in the survey study if they were younger than 18 years of age, were pregnant, were prisoners or incarcerated at any point during their treatment course. Patients who were non-ambulatory at baseline or were primarily wheelchair bound prior to their injury were also excluded from the study.

Survey design

Patient characteristics collected in the survey included age, gender, race, ethnicity, BMI, whether or not they were a polytrauma patient, and whether or not their injury had left them with bilateral NWB status.

The location of the patient’s injury was also collected: patients could select hip, femur, tibia/fibula, ankle, or foot.

Patients were asked “After your surgery, did you ever walk using the leg that had surgery performed on it (ie the operative leg) before being cleared to walk by your surgeon?” and could respond that they had been completely compliant with their NWB status, had walked <5 times, or had walked many times prior to being cleared by their orthopaedic surgeon.

Patients were also asked a number of questions related to their ability to comply with their non weight bearing status. If they had ambulated, they were asked to select factors that had led to them ambulating prior to clearance. They were also asked if they felt they had adequate support at home during their recovery, and if there were any interventions they felt might have helped them to not ambulate early.

Statistical analysis

Summary statistics for both continuous and categorical variables were generated for analysis of the data set. Normality testing for continuous variables were performed based on whether or not the distribution was normal, with parametric testing applied to data with a normal distribution and non-parametric testing applied to data that was not found to have a normal distribution. Statistical significance was set at p value < 0.05.

Graph 1.

Patient self-reported compliance with NWB instructions

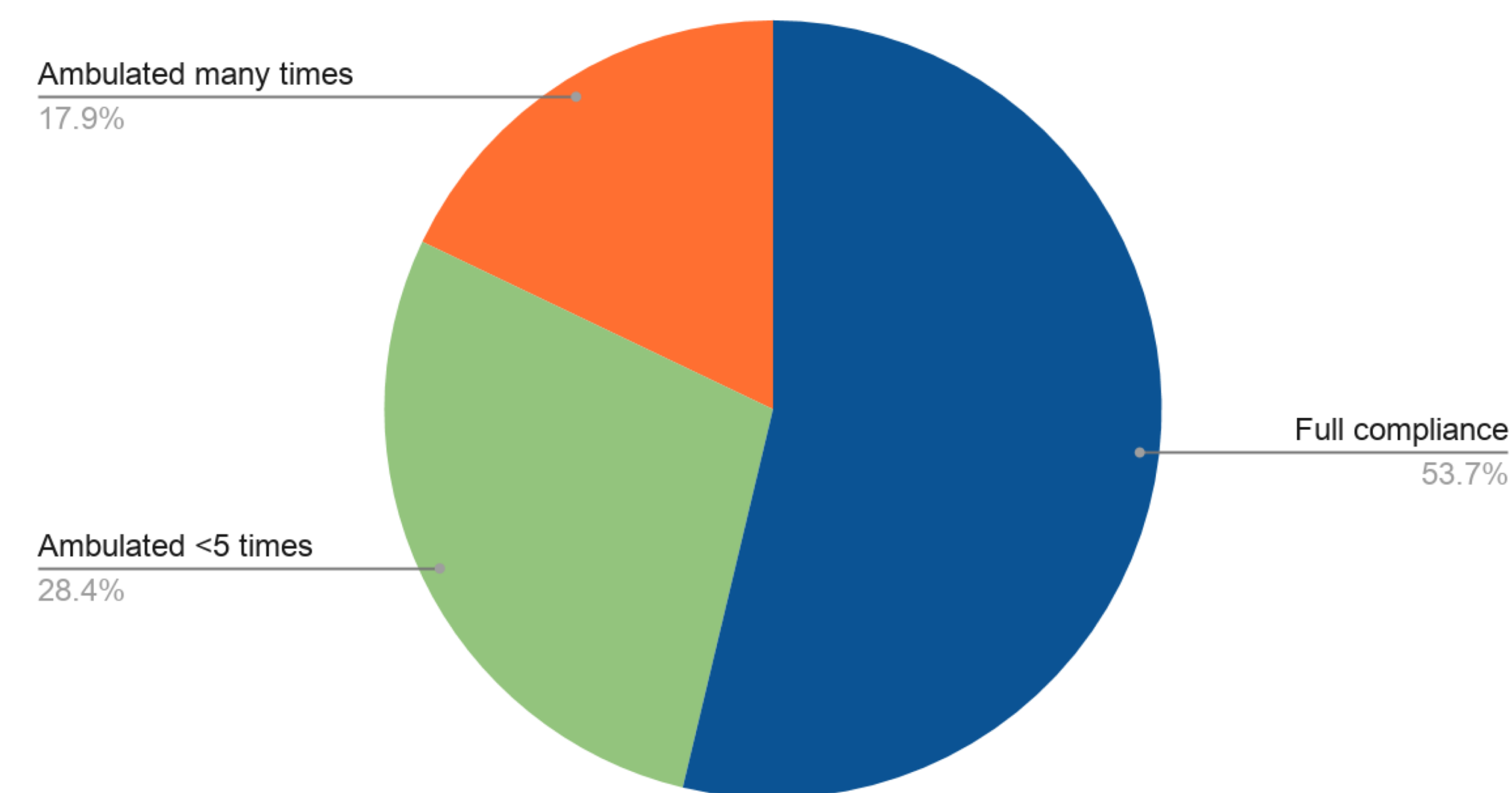


Table 1.

If you did put weight on the leg, what caused you to do this (select all that apply)?	
a. I did not fully understand the weight bearing instructions or know that I was supposed to not walk on the operative leg.	2 patients (7.4%)
b. I had trouble using my assistive devices such as a walker or crutches, and needed to put my leg down to balance.	4 patients (14.8%)
c. I needed to get somewhere (for example, to the bathroom or somewhere in my home) and did not have anyone to help me.	16 patients (59.3%)
d. I was trying to get back to work and needed to be able to walk to do my job.	2 patients (7.4%)
e. I felt that my leg was healed and that I would be able to walk without hurting myself.	7 patients (25.9%)
f. N/A: I did not put any weight on my injured leg until I was told it was safe to do so by my surgeon.	

Table 2.

Is there anything that you think might have helped you to not walk on your injured extremity early (select all that apply)?	
a. More physical therapy or training to help learn how to use crutches or a walker	11 patients (33.3%)
b. More support at home from either family and friends or trained healthcare professionals	10 patients (30.3%)
c. A better understanding of my injury and how long it would take to heal	16 patients (59.3%)
d. More time off from work	4 patients (12.1%)
e. N/A – I did not walk on my injured extremity early	

RESULTS

Between August 2020 and February 2021 67 patients completed the survey in trauma clinic. 19 women (28.4%) and 48 men (71.6%) participated. Of the 67 patients, 36 (53.7%) patients reported full compliance with their weight bearing status. 19 (28.4%) of patients reported they had ambulated less than 5 times prior to being cleared to advance their weight bearing status, and 12 (17.9%) of patients reports they had ambulated many times prior to being cleared to advance their weight bearing status.

Graph 1 demonstrates breakdown of patient self-reported compliance

Table 1 contains patient response when asked what factors contributed to causing them to ambulate prior to being cleared by their treating physician.

Table 2 provides further information regarding the factors that patients felt would have helped them to remain more compliant with their non weight bearing instructions.

Race, age, BMI, injury location, and living situation during recovery were not found to be correlated with inability to comply with non-weight bearing status. Amount of physical therapy received, pre-injury ambulatory status, polytrauma status, and bilateral non weight bearing status were also not found to be correlated.

Patients who respond that they did not feel they had adequate support during their recovery were significantly more likely to ambulate early than patients who felt they had sufficient support at home (P=0.018). (**Table 3**)

DISCUSSION/CONCLUSION

In our study, 53.7% of patients reported they were able to fully comply with non weight bearing instructions, while 28.4% reported they had ambulated <5 times and 17.9% ambulated many times. These self reported values are consistent with other studies in the literature which have previously demonstrated high rates of patient inability to comply with non weight bearing instructions, with previous studies identifying non compliance rates ranging from 20% to over 50% (7,8,9,10).

Of all the patient factors investigated in the study, the only factor that was identified to have a significant correlation with inability to comply with non weight bearing instructions was the feeling of inadequate support during their recovery. Patients who felt they did not have adequate support during their recovery were far more likely to be non compliant with their non weight bearing instructions than patients who reported having plenty of support from family, friends and healthcare workers during their recovery.

The most common reason patients identified that caused them to ambulate early was needing to get somewhere and not having anyone to assist them, following by feeling that they had adequately healed and were ready to ambulate. Interventions that patients felt would have helped them to avoid ambulation included a better understanding of their injury and how long the recovery process would take, more physical therapy, and more support at home.

Limitations of this study include a relatively small sample size, which was influenced by inconsistent patient follow up in our orthopaedic trauma population. The results of the study were self-reported and relied on patients being candid about their ability to comply with NWB status. Overall, the results of this study emphasize the importance of communication between the surgeon and their patients regarding their nonweight bearing status, and that it is important to ask patients at their follow up appointments if there is anything we can do to support their ability to remain NWB during their recovery.

Table 3.

Attribute	Ambulated many times	Ambulated <5 times	Full compliance	Total	p-Value	Test Method
Adequate Support, n (%)					0.018	Fisher's Exact
Yes	10 (18.5%)	11 (20.4%)	33 (61.1%)	54 (100.0%)		
Intermediate	1 (10.0%)	6 (60.0%)	3 (30.0%)	10 (100.0%)		
No	1 (33.3%)	2 (66.7%)	0 (0.0%)	3 (100.0%)		
Total	12 (17.9%)	19 (28.4%)	36 (53.7%)	67 (100.0%)		

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