

## POSTER 23

**Title:** Trends in Patient Outcome Scores in Orthopaedic Oncology: A Systematic Review

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### **Introduction:**

Over the last decade, there has been an increase in the use and development of new patient reported outcome measures (ROMs) across orthopaedics. These tools help to assess patient satisfaction and quality of life, allowing clinicians to better tailor treatment options for patients and assess treatment efficacy. The field of orthopaedic oncology has significantly trailed behind other orthopaedic subspecialties in defining trends and utility of ROMs over the last decade. Although the Musculoskeletal Tumor Society (MSTS) Score is a well-recognized ROM, new ROMs developed and established in literature have contributed to the difficulty in identifying the standard ROM within the field.

**Questions/Purposes:** In addition to MSTS, there are other ROMs commonly reported in musculoskeletal oncology literature such as the Toronto Extremity Salvage Score (TESS), and Patient-Reported Outcomes Measurement Information System (PROMIS). Due to the variety of interventions deployed in treating orthopaedic oncological patients, there may be difficulty in determining a true gold-standard ROM in the field. The purpose of this study is to identify trends in the use of ROMs in orthopaedic oncology over a 10-year period, as well as the frequency and distribution among specific pathologies and orthopaedic journals.

### **Patients and Methods:**

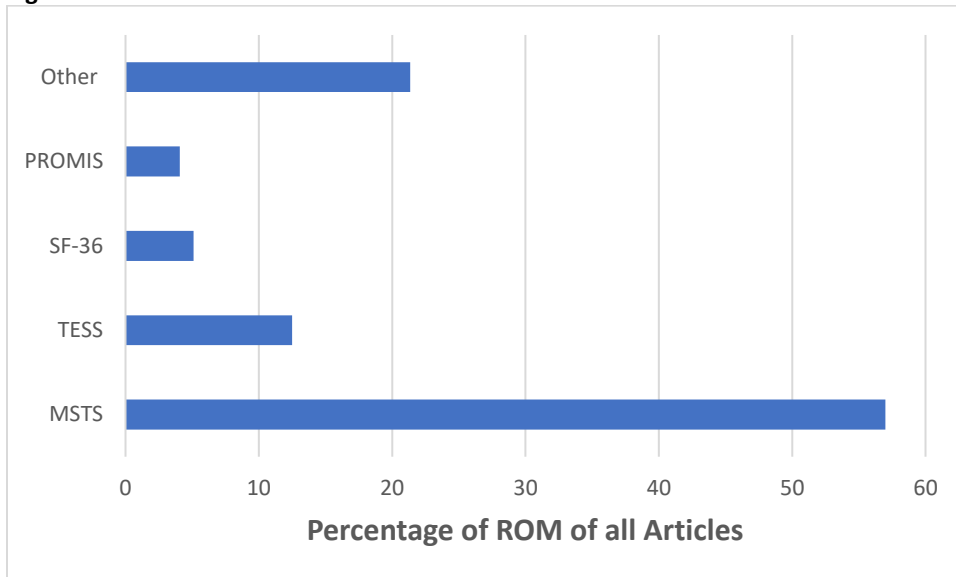
We conducted a systematic review of all original articles reporting on topics relating to orthopaedic oncology in five orthopaedic journals over a ten-year period (2011-2021). The ROM used in all of the articles was recorded, in addition to study date, study design, clinical topic/pathology, and level of evidence.

### **Results:**

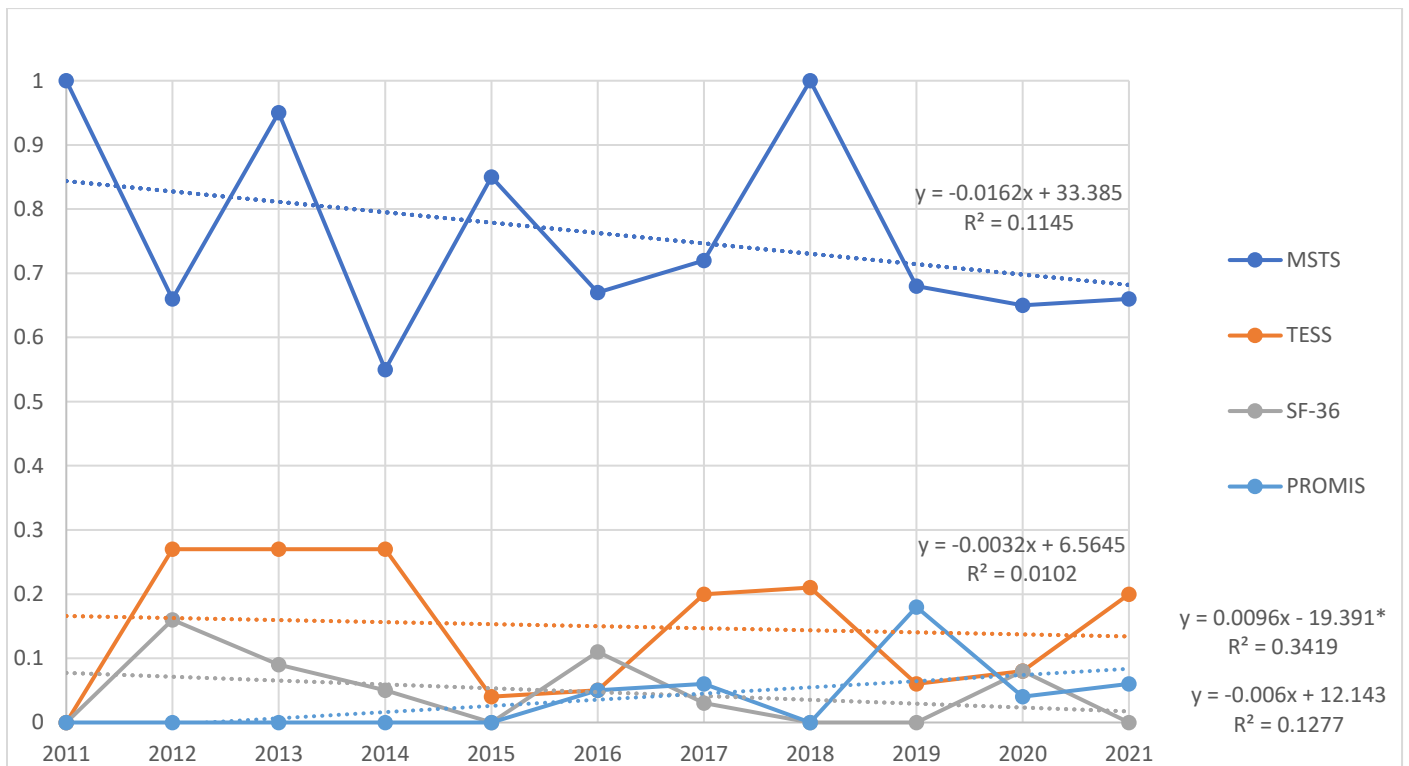
Out of 2,315 musculoskeletal tumor focused articles reviewed, 197 (8.5%) articles reported usage of one clinical outcome rating instrument. The most popular tools used were MSTS (57%) and TESS (12.5%), followed by the 36-Item Short Form Survey (SF-36) (5.1%), and PROMIS (3.1%) (Figure 1). The use of MSTS has steadily decreased approximately 2.5% each year for the last decade ( $p = 0.2$ ), along with TESS by .5% ( $p = 0.1$ ) and SF-36 by .6% ( $p = 0.08$ ). PROMIS has been trending positively over the past few years with an increase at a rate of 0.9% each year ( $p = .02$ ) (Figure 2). The majority of articles addressed both bone and soft tissue tumors (53%,  $n=106$ ), as opposed to only bone (43%,  $n=85$ ) or soft tissue (4%,  $n=8$ ). 46 articles (23.4%) of those reporting usage of a ROM utilized more than one ROM.

**Discussion and Conclusion:** MSTS is consistently the most widely used ROM in orthopaedic oncology across the five journals that we reviewed, though there seems to be a positive trend in the use of PROMIS. PROMIS, being a patient-reported outcome measure, not only measures a wide range of health domains, but it also eliminates bias that may arise with physician-reported outcome measures such as MSTS. The reporting of trends and utilization of ROMs in orthopaedic oncology continues to be sparse compared to other orthopaedic subspecialties. As orthopaedic oncologists consistently address complex pathologies in very morbid patients with multifactorial factors contributing to outcomes, it is important to note the need for consensus for standardization of measuring outcomes. We ultimately propose that the use of PROMIS concurrently with another functional outcome measure may provide clinicians a better perspective of patients' overall outcome. Future directions hope to broaden search criteria to increase inclusion of literature focusing primarily on soft tissue pathology, to more accurately reflect the scope of orthopaedic oncology practice, and to further delve into the positive trend of PROMIS' use.

**Figures:**



**Figure 1:** This graph displays the percentage of specific patient reported outcome measures (PROMs) of all articles that appeared once or more. PROMIS = Patient-Reported Outcomes Measurement Information System, SF-36 = Short Form-36 Health Survey, TESS = Toronto Extremity Salvage Score, MSTS = Musculoskeletal Tumor Society Score.



**Figure 2:** This graph represents the proportion of articles in which the top four patient reported outcome measures (PROMs) appeared at least once throughout a ten-year period (2011-2021). Regression analysis and data

are included (\* =  $p < 0.05$ ). MSTS = Musculoskeletal Tumor Society Score, TESS = Toronto Extremity Salvage Score, SF-36 = Short Form-36 Health Survey, PROMIS = Patient-Reported Outcomes Measurement Information System.