

# Associations Between WOMAC Function Scores and Changes in Sedentary Bouts Following a ZILRETTA Injection in Individuals with Radiographic Knee Osteoarthritis

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## BACKGROUND

- Symptomatic knee osteoarthritis (OA) affects 14 million individuals in the United States alone<sup>1</sup>
- Individuals with knee osteoarthritis often exhibit functional deficits that may result in increased sedentary behavior, or decreased physical activity<sup>2</sup> which may be detrimental to physical function<sup>3</sup>
- The Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) Function subscale serves as a measure of functional limitation, with higher scores indicating worse self-reported function<sup>4</sup>
- Intra-articular corticosteroid injections are commonly used to treat individuals with knee OA, providing pain relief and decreasing joint inflammation<sup>5</sup>
- It is unknown whether changes in sedentary bouts are related to changes in self-reported physical function in knee OA patients

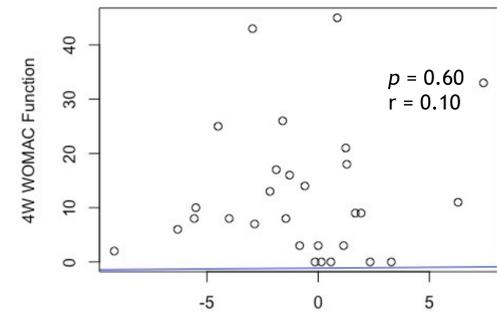
## PURPOSE

To determine associations between WOMAC Function subscale scores and changes in sedentary time from baseline to 4 and 8 weeks in individuals with knee OA that received a ZILRETTA® corticosteroid injection. **Hypothesis:** we hypothesize reduced sedentary bouts will be associated with better WOMAC Function subscale scores across the 8-week period following the ZILRETTA injection

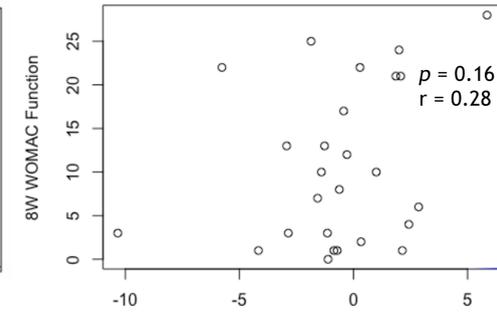
## METHODS

- Participants were between 40-75 yrs with radiographic knee OA ( $\geq 2$  on the Kellgren-Lawrence Scale) and BMI < 35 who received a ZILRETTA® corticosteroid injection were included
- Subjects were instructed to wear a GT9X Link ActiGraph activity monitor on their right hip for 7 days at baseline, 4-weeks and 8-weeks-post-injection, and total sedentary bouts were averaged across the wear period
- A valid wear period was identified as 3 weekdays and 1 weekend day, worn for at least 10 hours each day
- Freedson Adult 1998 cut-points were utilized to identify sedentary time (0-99 counts per minute)
- A sedentary bout was defined as 10 consecutive minutes at <100 CPM
- Subjects completed the WOMAC Function subscale at each timepoint
- Associations between the WOMAC Function scores and changes in sedentary bouts per day (baseline-4week, baseline-8week) were measured using Pearson product-moment correlations (r)

## RESULTS



**Figure 1.** Baseline-4W Associations Between WOMAC Function Subscale and Changes in Sedentary Bouts per Day



**Figure 2.** Baseline-8W Associations Between WOMAC Function Subscale and Changes in Sedentary Bouts per Day

**Table 3.** Sensitivity Analysis Assessing Activity Changes Over Time

	Baseline	4W	8W	F statistic	p
WOMAC Function Subscale	28.03 ± 9.42	12.34 ± 12.26	10.69 ± 9.02	25.66	<0.0001
Steps per Day	6588 ± 2204	6673 ± 2465	6441 ± 2238	0.07	0.93
Total Sedentary Bouts	101.07 ± 24.14	98.14 ± 29.29	101.7 ± 22.93	0.06	0.93
Average Time in Sedentary Bouts per Day (min)	344.2 ± 85.1	338.3 ± 86.48	330.2 ± 83.49	0.19	0.83
Total Wear Time per Day (min)	834.7 ± 65.54	828.6 ± 57.52	832.7 ± 74.14	0.06	0.94

Table 3. Group mean differences in sedentary behavior and physical activity were assessed using separate one-way analyses of variance

- No statistically significant associations were seen between changes in sedentary bouts per day and WOMAC Function scores for the 4-week (Figure 1) or 8-week timepoints (Figure 2)
- WOMAC Function scores decreased from baseline to 4 and 8 weeks after the ZILRETTA® injection, but there were no observed changes in sedentary behavior and activity over time (Table 3)

## METHODS CONT.

- A *post hoc* analysis was performed to assess differences in sedentary behavior (total sedentary bouts, average time in sedentary bouts per day) and physical activity (steps per day, total wear time per day) over time utilizing separate, one-way analyses of variance



**Figure 3.** ZILRETTA® corticosteroid injection single-dose kit

**Table 1.** Participant Demographics (Mean ± SD)

% Female	46.67
Age (yrs)	63.5 ± 7.42
Height (m)	1.71 ± 0.09
Weight (kg)	85.00 ± 15.33
BMI (kg/m <sup>2</sup> )	28.59 ± 3.44

SD: Standard Deviation, BMI: Body Mass Index

## DISCUSSION

- No statistically significant associations were observed between WOMAC scores and the change in sedentary bouts from baseline to 4 weeks and 8 weeks respectively
- However, WOMAC Function scores did decrease across the 8-week period following the ZILRETTA® injection, suggesting patients perceived improvements in physical function
- The post hoc analysis indicated that there were no significant changes in physical activity or sedentary behavior following the injection, suggesting that individuals did not change activity patterns despite improvements in physical function
- The sample size for this study was small (n=30) and our findings may not be generalizable to other knee OA patients
- Increased regular physical activity has been shown to reduce pain and increase physical function in individuals with knee OA<sup>6</sup>
- Future studies should consider the effectiveness of combined corticosteroid injections and activity promotion on self-reported physical function

## REFERENCES

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