FoU Spenshult

Reumatologisk forskning och utveckling

Validation of the osteoarthritis modified Test for Substitution Patterns in individuals with knee pain

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CONCLUSIONS

- The osteoarthritis modified Test for Substitution Patterns (OA-TSP) could be used as a functional test measuring quality of movement (to detect altered knee alignment) in individuals with knee pain interpreted as an early sign of knee OA.
- The test can assist the physiotherapist in the decision-making in the rehabilitation of individuals with symptomatic knee OA.

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Background

Few tools evaluates quality of movements in individuals with knee osteoarthritis (OA). The Test for Substitution Patterns (TSP) is developed and validated to measure functional postural control and altered movement patterns in individuals with anterior cruciate ligament injury (1), but has not yet been evaluated in individuals with knee OA.

Objectives

To study the relationships between the OA modified TSP (OA-TSP) and self-reported knee function as measured with the Knee injury and Osteoarthritis Outcome Score (KOOS) and the 30-s chair stand test (30-s CST) in individuals with knee pain. A second aim was to study the discriminative ability of the OA-TSP for unilateral knee pain.

Methods

Sixty-two individuals with symptomatic knee osteoarthritis were included using consecutive sampling.

Health status was assessed with the EuroQol five dimension scale (EQ5D, 0-1 worst-best), and knee function in five subscales for KOOS (pain, symptoms, ADL, quality of life and sport/recreation, 0-100 worst-best). The 30-s CST-test measured the number of rises in 30 seconds.

In the OA-TSP, substitution patterns were observed and scored from 0-3 (no substitution pattern-poorly performed) during five standardized functional movements. The maximum score is 54 points/side with total score of 108 points.

Median and interquartile range were used for all descriptive data. Spearman´s correlation and Wilcoxon signed rank test were used for analyzes. A correlation coefficient $r_s \geq \pm 0.50$ is considered large, ± 0.30 to < 0.50 moderate and ± 0.10 < 0.30 small (2).

Results

- Moderate, significant correlations were observed between OA-TSP total score and KOOS pain and KOOS ADL (r_s=-0.30; p=0.03, r_s=-0.35; p<0.01 respectively). No correlations were observed between OA-TSP and KOOS sport/recreation and KOOS symptoms (r_s=-0.13; p=0.36, r_s=-0.22; p=0.11 respectively).
- There was a moderate, significant correlation between OA-TSP total score and 30-s CST (r_s=-0.34; p<0.01).
- OA-TSP has a discriminative ability for unilateral knee pain with worse score in the painful side, with median 18 (13-22) vs.14 (10-19) in the not painful side, p=0.001.

Table 1. Characteristics for all, and stratified for women and men. Presented as median and interquartile range (IQR)

	All n =62	Women n = 47	Men n = 15
Age (years)	54 (48-58)	54 (49-58)	52 (40-59)
BMI[1]	25 (23-29)	24 (23-29)	28 (24-29)
EQ-5D[2]	0.80 (0.73-0.80)	0.80 (0.73-0.80)	0.73 (0.66-0.80)
OA-TSP[3] total (bilateral)	30 (24-41)	32 (23-41)	29 (25-33)
KOOS[4] pain	75 (58-86)	72 (57-82)	81 (72-90)
KOOS[4] symptoms	71 (54-82)	68 (52-80)	80 (71-87)
KOOS[4] ADL[5]	87 (72-93)	85 (69-92)	80 (71-87)
KOOS[4] sport/rec	48 (25-74)	35 (24-63)	58 (46-95)
30-s CST[6]	16 (13-21)	16 (13-22)	15 (13-17)

[1]Body Mass Index, [2]EuroQol 5 Dimensions 3-levels (0-1, worst to best), [3]Osteoarthritis modified Test for Substitution Patterns, [4]Knee injury and Osteoarthritis Outcome Score (0-100 worst-best), [5]Function in daily living, [6]30-sec Chair stand test

Table 2. Spearmans correlation koefficient r_s and p-values for associations between OA-TSP[1], KOOS[2] sub scales and 30-s CST[3]

	OA-TSP[1] total score (bilateral)
KOOS[2]pain	-0.30, p=0.03
KOOS[2] symptoms	-0.22, p=0.11
KOOS[2] ADL[4]	-0.35, p=0.01
KOOS[2] sport/recreation	-0.13, p=0.36
30-s CST[3]	-0.34, p<0.01

[1]Osteoarthritis modified Test for Substitution Patterns, [2]Knee injury and Osteoarthritis Outcome Score, [3]30-sec Chair stand test, [4]Function in daily living

Figure I. Tip-toe standing knee flexion, knee flexion-extension standing on one leg, and forward lunge.

References

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