

# FUNCTIONALITY AND PAIN ACCORDING TO KELLGREN – LAWRENCE CLASSIFICATION SYSTEM: RESULTS FROM 303 HIP OSTEOARTHRITIC PATIENTS

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**Introduction:** Hip osteoarthritis (OA) is among the most prevalent and disabling conditions affecting the elderly [1]. Worldwide, there is an estimated 25% lifetime risk of symptomatic hip OA in people who live to age 85 [2]. In the Greek population, hip OA has a prevalence of 0.9/1000: 1.5/1000 in women and 0.3/1000 in men [3]. Furthermore, the symptomatic manifestations of OA contribute substantially to functional disability, significantly decreasing the patient's quality of life [4].

**Purpose:** Comparison of pain and functionality levels in hip OA patients according to the Kellgren – Lawrence osteoarthritis classification system [5].

**Material & Method:** 303 patients with symptomatic OA hip participated in the present study. Patients were divided into three groups according to the Kellgren – Lawrence classification system (Grade 2, Grade 3, and Grade 4). Pain intensity was measured with the Face Pain Scale-Revised (FPS-R) [6], while patients' functional status was evaluated with the Lower Extremity Functional Scale - Greek version (LEFS-Greek) [7,8]. Demographic and clinical characteristics were also recorded. All analyses were carried out using the statistical package SPSS v21.00 (IBM Corporation, Somers, NY, USA). A p-value of <0.05 was set as a level of statistical significance.

**Result:** No significant differences were found in regards to age, height, weight, BMI (p=0.100), dominant lower limb and affected hip, however a statistically significant difference in terms of gender (p=0.017), between groups was observed (Table 1). Pairwise comparisons indicated that Grade 2 presented lower nocturnal pain, morning stiffness, and percentage of use of assistive devices compared with Grade 3 and Grade 4 (all p-values <0.05) (Table 2). There is a statistically significant difference between groups concerning pain intensity; patients of Grade 2 presented lower FPS- R scores compared with Grade 3 and Grade 4 (all p-values <0.005) (Table 2, Figure 1). Regarding functionality, Grade 2 presented a higher LEFS-Greek total score compared with Grade 3 (p<0.005) and Grade 4 (p<0.005), respectively (Table 2, Figure 2).

**Table 1. Demographic Characteristics regarding Kellgren–Lawrence classification system of hip osteoarthritis (n=303)**

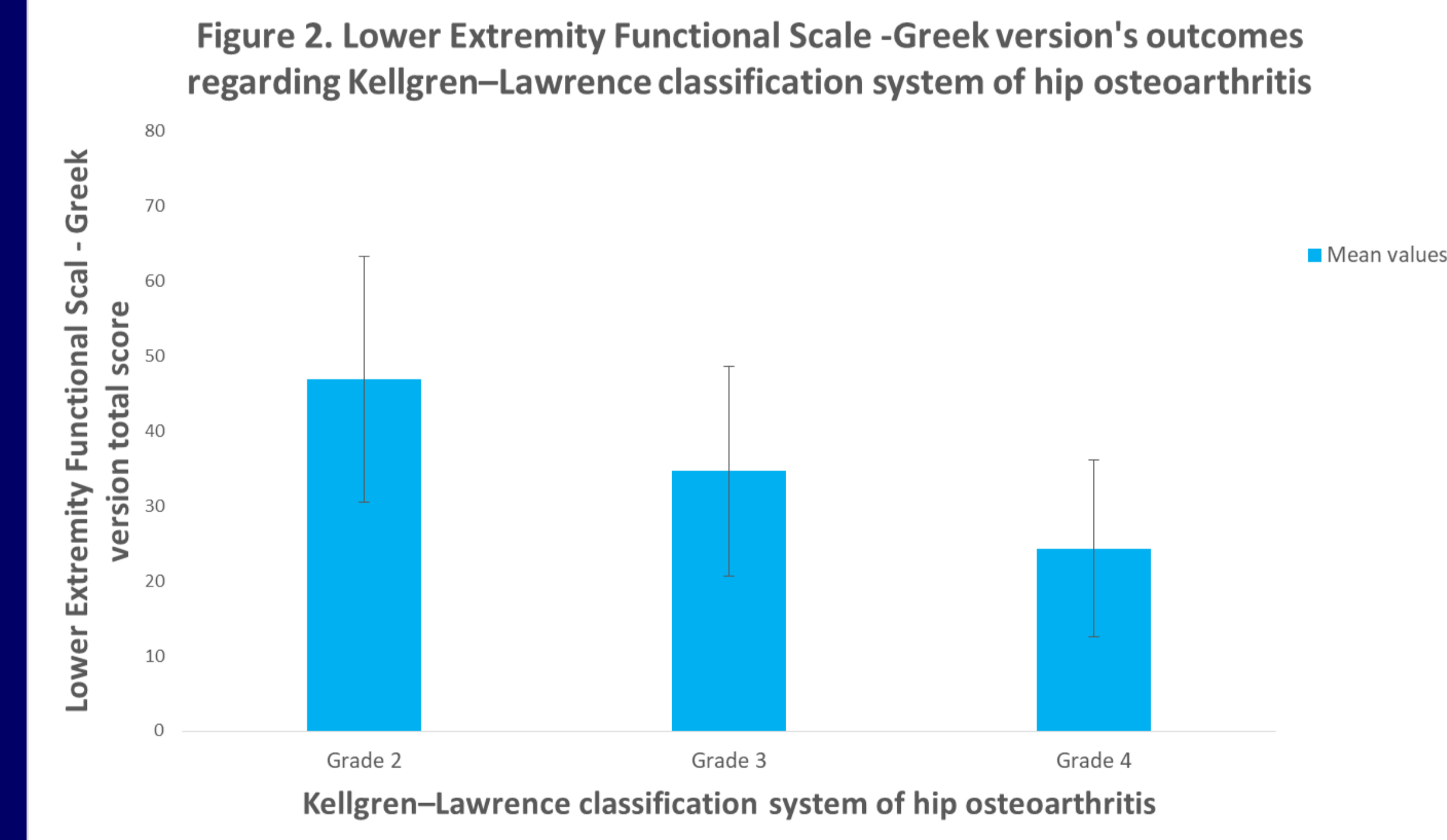
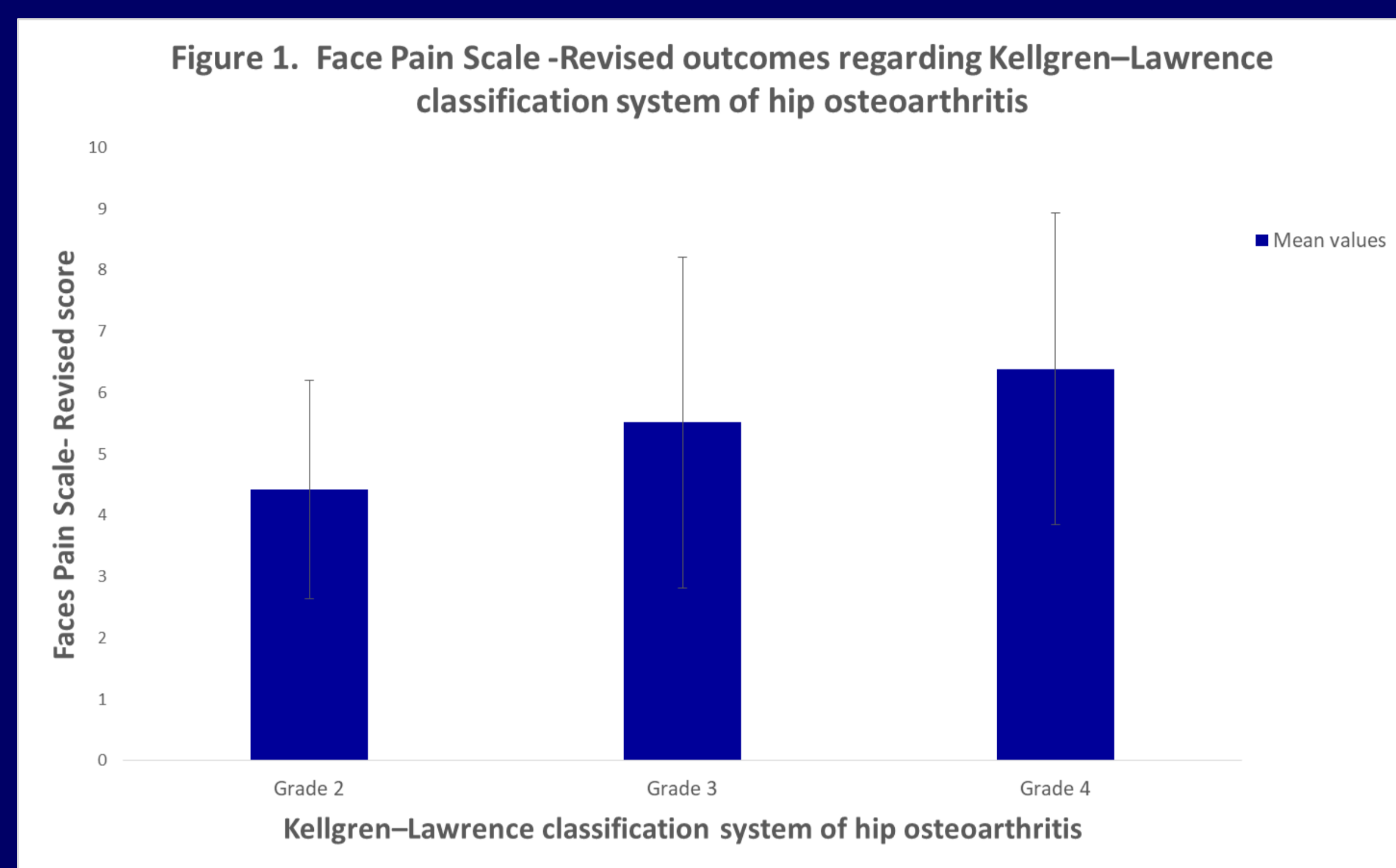
Demographics	Grade 2 ( n=76 )	Grade 3 ( n=103)	Grade 4 ( n=124)	p-value
Age(years)	64.08±7.22 (51-74)	66.18±8.34 (50-87)	65.66±8.04 (50-87)	0.191
Gender : Male/Female	30 (39.5%) / 46 (60.5%)	22 (21.4%) / 81 (78.6%)	30 (24.2%) / 94 (75.8%)	0.017
Height (m)	1.66±0.08 (1.50-1.80)	1.65±0.09 (1.48-1.88)	1.65±0.09 (1.50-1.87)	0.586
Weight (kg)	76.63±13.04 (48-106)	75.79±13.43 (52-116)	79.40±19.02 (51-135)	0.206
BMI (kg/m <sup>2</sup> ) †	27.71±4.13 (17.42-37.46)	27.70±4.26 (20.28-42.61)	28.95±5.23 (19.92-45.63)	0.100
Dominant Lower Limb: Right/Left	64 (84.2%) / 12 (15.8%)	86 (83.5%) / 17 (16.5%)	108 (87.1%) / 16 (12.9%)	0.723
Affected Hip: Right/Left	40 (52.6%) / 36 (47.4%)	54 (52.4%) / 49 (47.6%)	74 (59.7%) / 50 (40.3%)	0.467

Data were expressed as mean±SD (min – max) for normally distributed continuous variables and frequencies (percentages) [n (%)] for categorical variables.  
 † analysis performed using Welch test

**Table 2. Patient-reported outcomes regarding Kellgren–Lawrence classification system of hip osteoarthritis (n=303)**

Outcomes	Grade 2 (n=76 )	Grade 3 (n=103)	Grade 4 (n=124)	p-value
Nocturnal pain: No/Yes	44 (57.9%) / 32 (42.1%)	48 (46.6%) / 55 (53.4%)	42 (33.9%) / 82 (66.1%) **	<0.005
Morning stiffness: No/Yes	42 (55.3%) / 34 (44.7%)	31 (30.1%) / 72 (69.9%)**	24 (19.4%) / 100 (80.6%)**	<0.005
Assistive device: No/Yes	72 (94.7%) / 4 (5.3%)	88 (85.4%) / 15 (14.6%)	76 (61.3%) / 48 (38.7%) ** ##	<0.005
Faces Pain Scale- Revised	4.0(2.0)	6.0(4.0) **	6.0(4.0) ** #	<0.005
LEFS - Greek †	49.21±15.52 (15-79)	34.71±14.01 (10-73) **	24.34±11.81 (10-67) ** ##	<0.005

Data were expressed as mean±SD (min – max) for normally distributed continuous variables, median ( IQR ) for non normally distributed continuous variables and frequencies (percentages) [n (%)] for categorical variables.  
 LEFS = Lower Extremity Functional Scale (Greek version) total score  
 † analysis performed using Welch test and Games-Howell test  
 \*\* p<0.005 vs Grade 2 , # p<0.05 vs Grade 3 , ## p<0.005 vs Grade 3



**Conclusions:** As expected, the higher the Kellgren – Lawrence grade of hip OA, the higher the pain levels and the degree of difficulty a person experiences in daily-life activities.

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