

Abstract

Objective:
The aim of this study is to investigate early recovery factors of the gait ability after total knee arthroplasty(TKA) for patients with haemophilia.

Patients and methods:
12 hemophilic arthropathies (10 severe haemophilia patients: haemophilia A 8 (inhibitor 1), haemophilia B 2(inhibitor 1), average age 49 ± 15 years) had been operated on TKA (revision 1) from May 2010 to June 2011. They were divided into two groups based on post-operative 80m maximum gait speed(MGS) at the discharge day (average discharge day was 30 ± 9.5 day). Group I was recovered to pre-operative MGS until discharge, group II was not. Several pre-operative factors were analyzed to compared with two groups, which were maximum 80m gait speed, 30 sec one leg standing, quadriceps and hamstring muscle strength, knee joint range of motion, static standing Weight Bearing Balance laterality, length of the displacement of the center of gravity(LNG), a center of gravity movability range(ENV AREA), knee extension rag.

Results:
Pre-operative MGS of Group I and II were 1.38 ± 0.18 m/sec and 1.36 ± 0.19 m/sec, and Post-operative MGS of Group I and II were 1.55 ± 0.18 m/sec and 0.99 ± 0.41 m/sec respectively. Ope-side quadriceps muscle strength and Weight Bearing Balance laterality before operation had significant differences between two Groups($p < 0.05$). 30 sec one leg standing, hamstrings muscle strength, knee joint range of motion, length of the displacement of the center of gravity(LNG), a center of gravity movability range(ENV AREA), knee extension rag were no significant ($p < 0.05$).

Introduction

- Early return to society as soon as possible after TKA is very important thing for haemophilia patients, because many haemophilia patients are performed TKA at relatively young age.
 - Some cases gait ability does not recover preoperative level after TKA by discharge day.
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- The aim of this study is to clarify what kind of factor related to recovery of the gait ability.

Patients & Methods

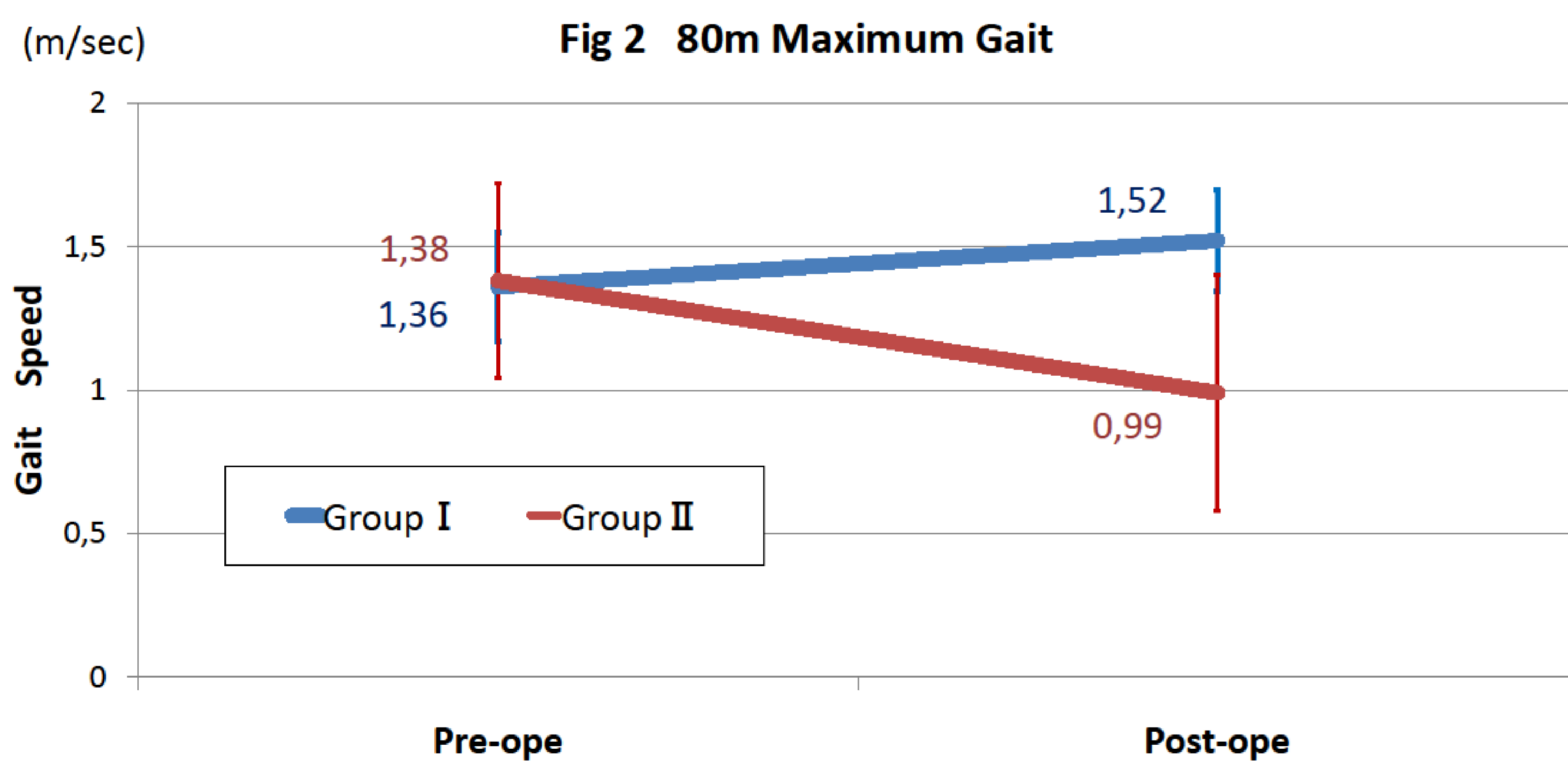
Patients: 10 cases (12 joints) that had performed TKA.(Fig 1)
※Patient No.1 and No.2 had performed TKA on both sides, intervals five months or more.
About Groups: Divided to two groups according to their 80m M.G.S.at discharge day(Fig 2)
Group I was recovered to pre-operative MGS until discharge day.
Group II was not recovered to pre-operative MGS until discharge day.

Fig 1 About Groups

No.	age	side (Lt · Rt)	Discharge day (Post ope)	Digonosis	inhibitor	Comorbidity	Height (cm)	Weight (kg)	BMI kg/m^2	
Group I	1(1)	65	Lt	25	Severe A	None	HCV	171	67	23
	2(1)	68	Lt	45	Severe B	None	HCV	162	62	23.4
	3	47	Rt	31	Severe A	None	HCV	162	58	22.1
	4	34	Lt	22	Severe A	None	HCV	179	82	25.8
	5	33	Lt	38	Severe A	High Responder	HCV	151	64	28.1
	6	30	Rt	21	Severe A	None	HCV	175	66	21.5
Group II	7	61	Lt	43	Severe A	None	HCV	163	54	20.3
	1(2)	65	Rt	36	Severe A	None	HCV	171	67	23
	8	41	Rt (revision)	28	Severe A	None	HIV,HCV	170	66	22.8
	9	38	Lt	49	Severe B	High Responder	HCV	157	52	21.3
	10	42	Rt	41	Severe A	None	None	165	53	19.5
	2(2)	69	Rt	43	Severe B	None	HCV	162	62	23.4

Group	Knees	Ave Age (Year)	Ave Discharge (day)	Ave Height (cm)	Ave Weight (kg)	Ave BMI (kg/m^2)
I	6	46.1 ± 16.8	40 ± 7.2	166.4 ± 10.2	66.3 ± 8.5	24.0 ± 2.0
II	6	52.7 ± 13.8	30 ± 9.5	164.5 ± 5.2	58.9 ± 6.7	21.7 ± 1.6

※There were no significant difference about age, side, discharge day(post-operation day), height, weight, BMI, using unpaired Student's two tailed t-test analysis($p < 0.05$).



● Several pre-operative factors were analyzed to compared with two groups, which were maximum 80m gait speed, 30 sec one leg standing, quadriceps and hamstrings muscle strength, knee joint range of motion, static standing Weight Bearing Balance laterality, length of the displacement of the center of gravity(LNG), a center of gravity movability range(ENV AREA), knee extension rag, using unpaired Student's two tailed t-test analysis.

Result

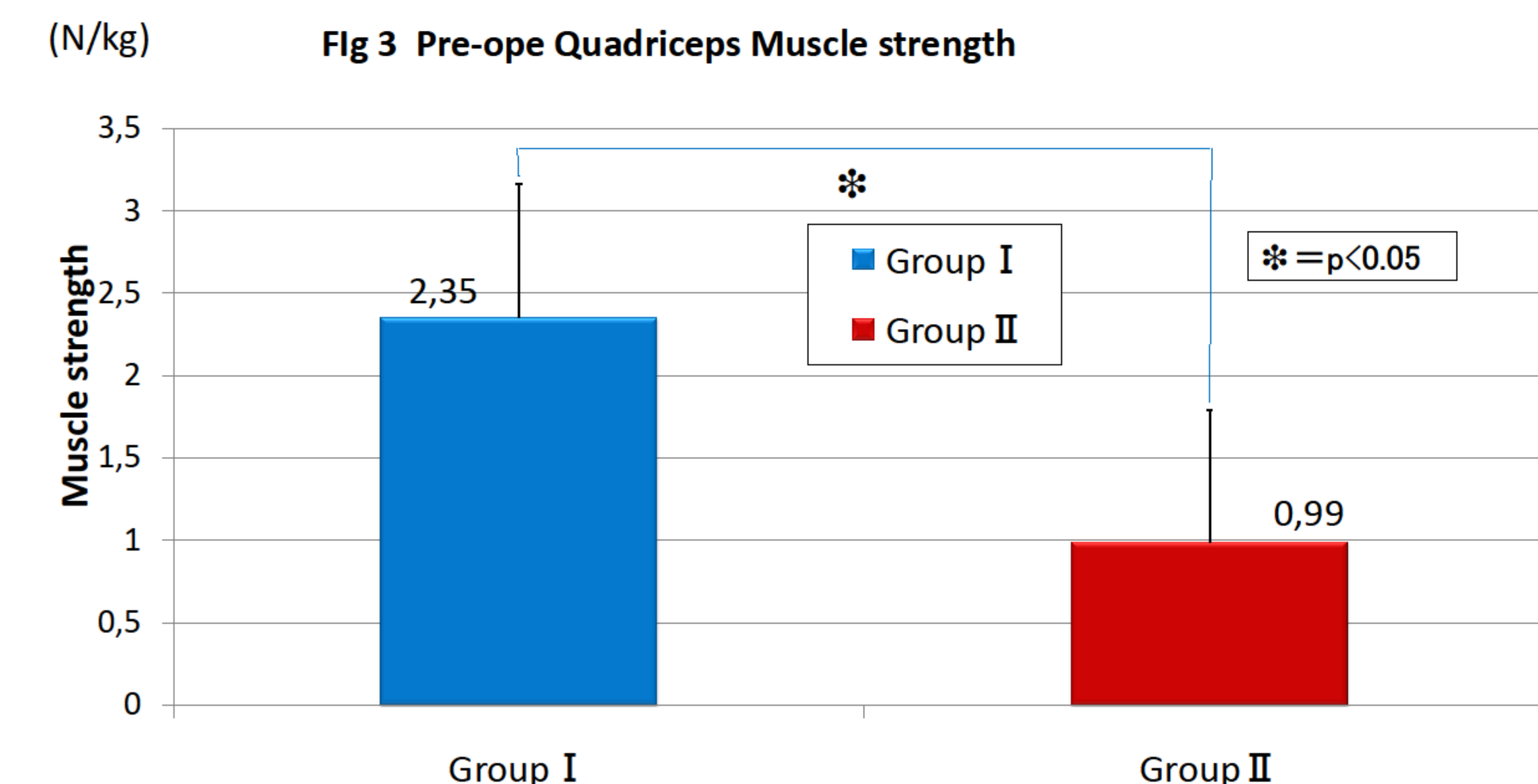


Fig 3:Pre-operative operation side quadriceps muscle strength (Group I 2.35 ± 0.8 N/kg, Group II 0.99 ± 0.8 N/kg) is significant differences between two Groups ($p < 0.05$).

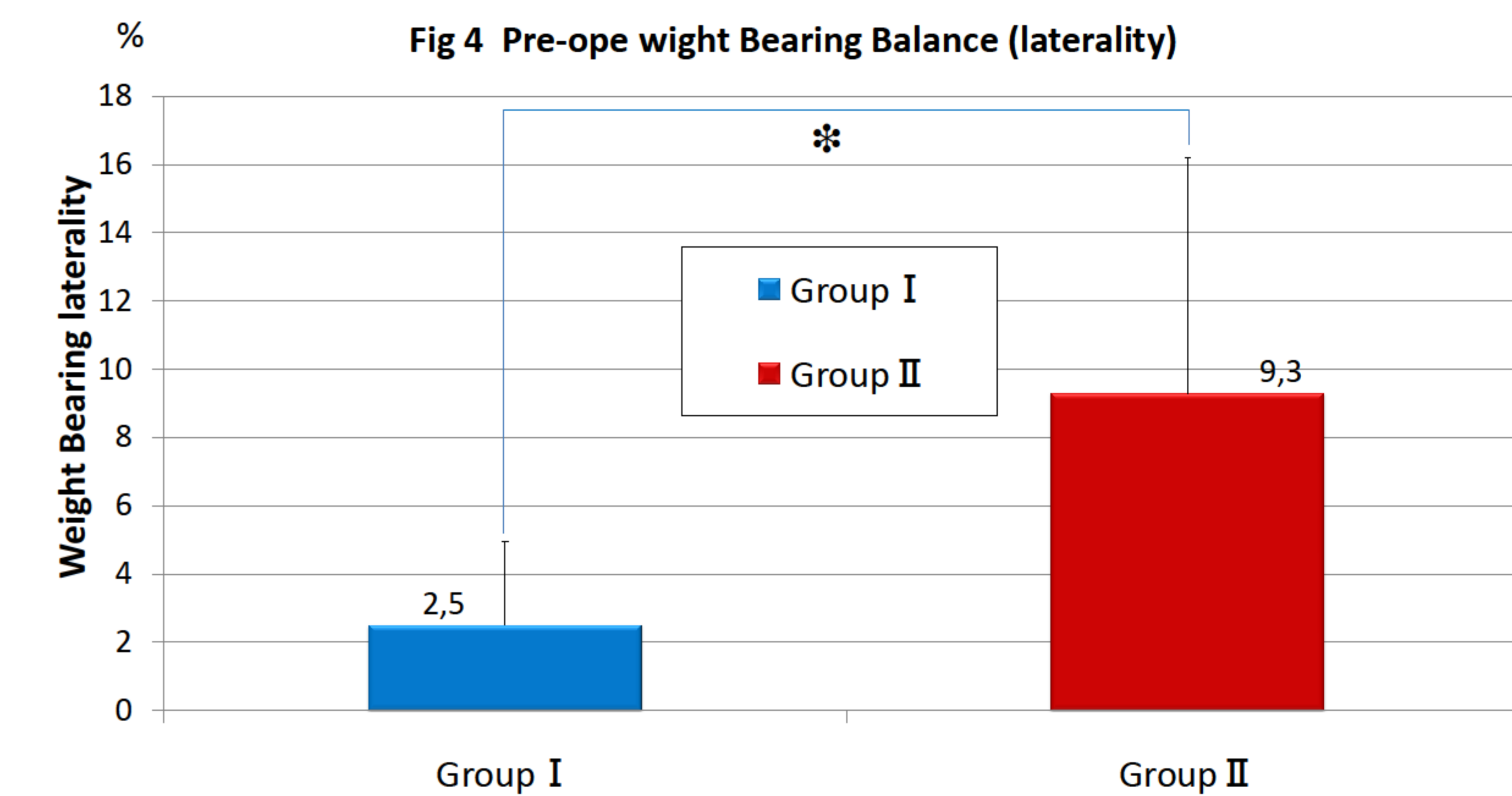


Fig 4: Pre-operative Weight Bearing Balance laterality (Group I 2.5 ± 2.4 (%), Group II 9.3 ± 6.8 (%)) were significant differences between two Groups ($p < 0.05$).

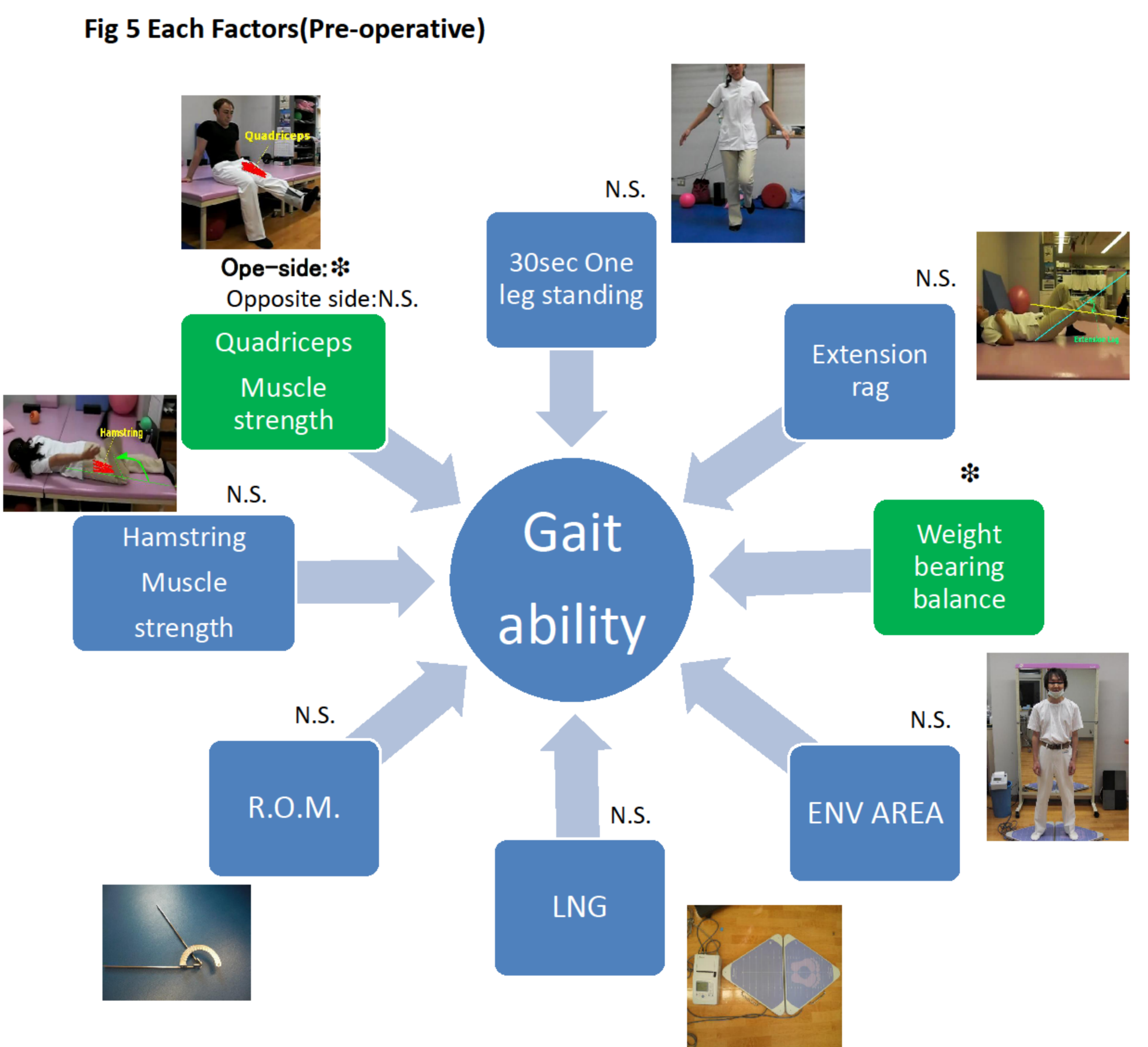


Fig 5: 30 sec one leg standing, hamstrings muscle strength, knee joint range of motion, length of the displacement of the center of gravity(LNG), a center of gravity movability range(ENV AREA), knee extension rag were no significant ($p < 0.05$).

Conclusion

This result suggested :

- ①To evaluation of the preoperative weight bearing balance and muscle strength of operation side quadriceps enable estimate recovery of postoperative gait ability.
- ②Weight bearing balance training and ope-side quadriceps muscle strengthening before TKA are important to early recovery gait ability.