

The effect of 8-week aquatic exercise on Strength, Balance and Gait speed in hemophilia

Se Jin Kwon, R.P.T, Jong Seon Kim, R.P.T, Ki Young Yoo, M.D.

Korea Hemophilia Foundation

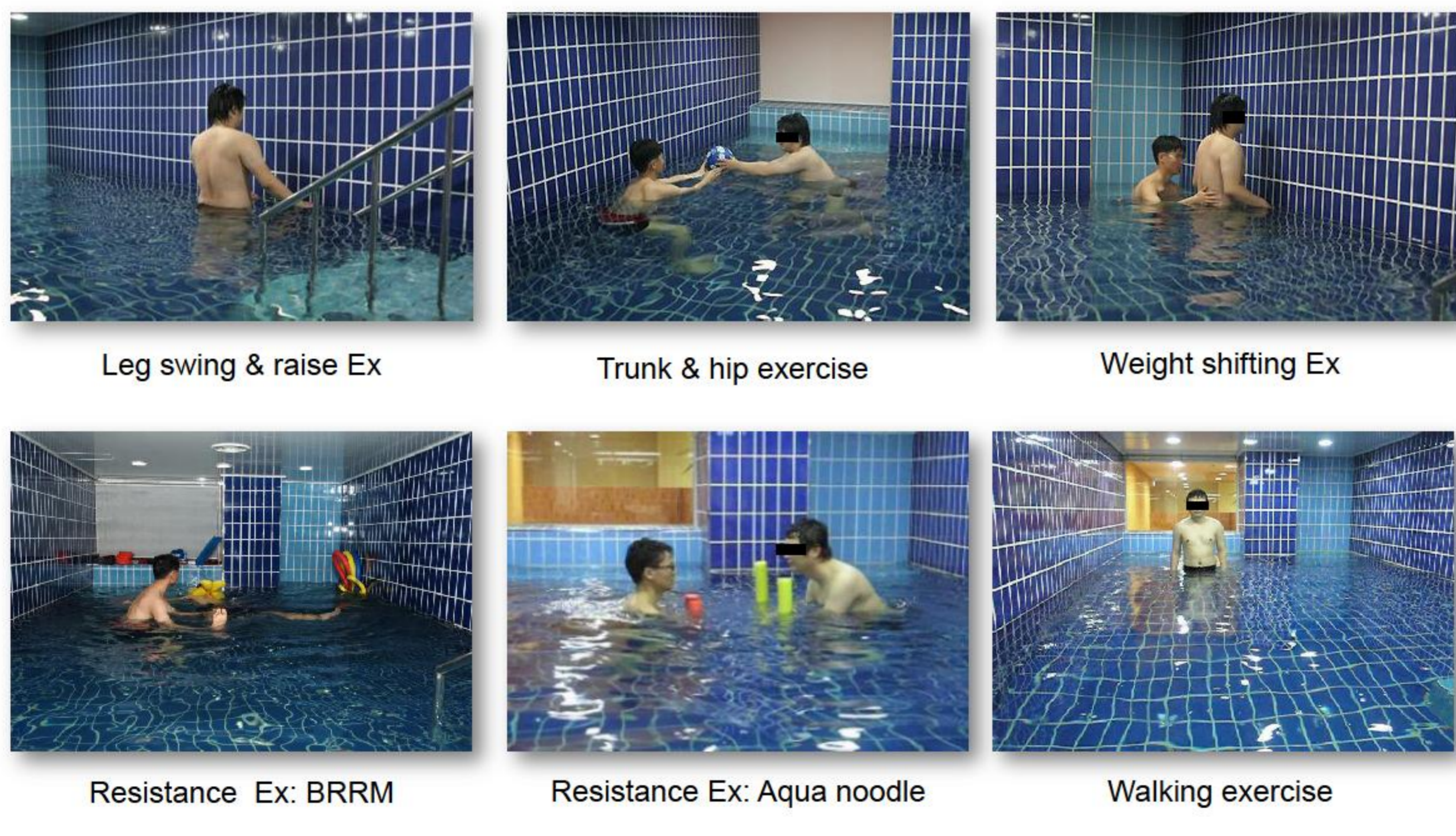
Objectives

Aquatic exercise is known to strengthen improve deep muscle power and to prevents of fall down through the improve of muscle strength and ability of balance. In this study, 8 weeks (from August to November in 2011 in Korea Hemophilia Foundation Clinic) of aquatic exercise was conducted in patients with hemophilia to validate the effectiveness of aquatic exercise.

Methods

We enrolled 11 patients and divided them into two groups. Aquatic exercise group is composed of 5 patients and control group 6 patients. Control group got the regular exercise at home. The average age of both groups was 40.2 years (median age: 39 years). The Pettersson score of six joints were 26.3 and 21.8 for aquatic exercise group and control group respectively. The aquatic exercise consisted of 40 min a session, 2 or 3 sessions a week for 8 weeks. Depth and temperature of water pool was 110cm and 31°C.

Aquatic exercise program in the Pool



Process of exercise program

Process	Aqua-exercise
Warm-up exercise (10mins)	1. Stretching 2. Leg swing & raise(forward, back, cross, lateral, rotation)
Main exercise (25mins)	1. Walking exercise (forward, back, side) 2. Trunk & hip exercise 3. Knee exercise(flexion, extension) 4. Weight shifting exercise 5. Resistance exercise 6. Balance exercise 7. Bad Ragaz Ring Method(BRRM)
Closure exercise (5mins)	1. Stretching 2. swinging(oneself)

Assessment of after exercise



One legged stance time



10m gait speed test

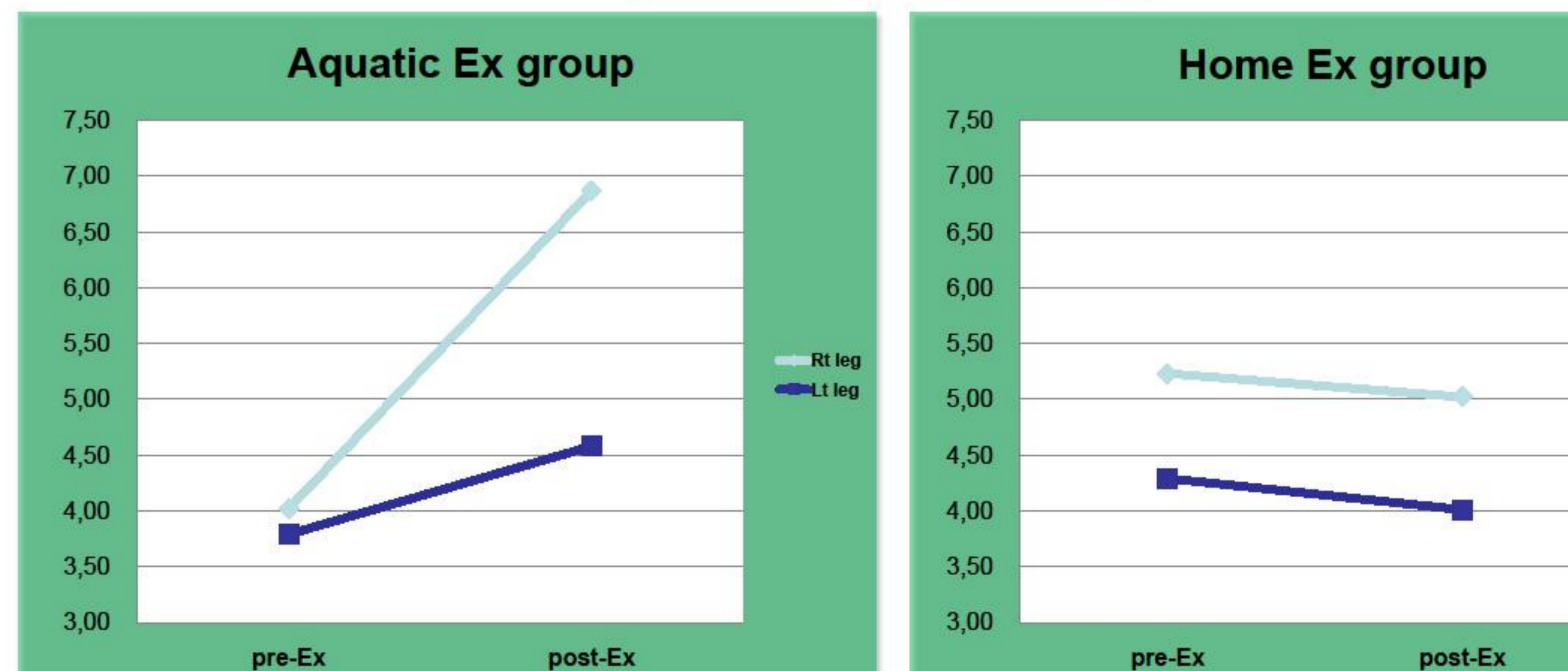


Time Up & Go

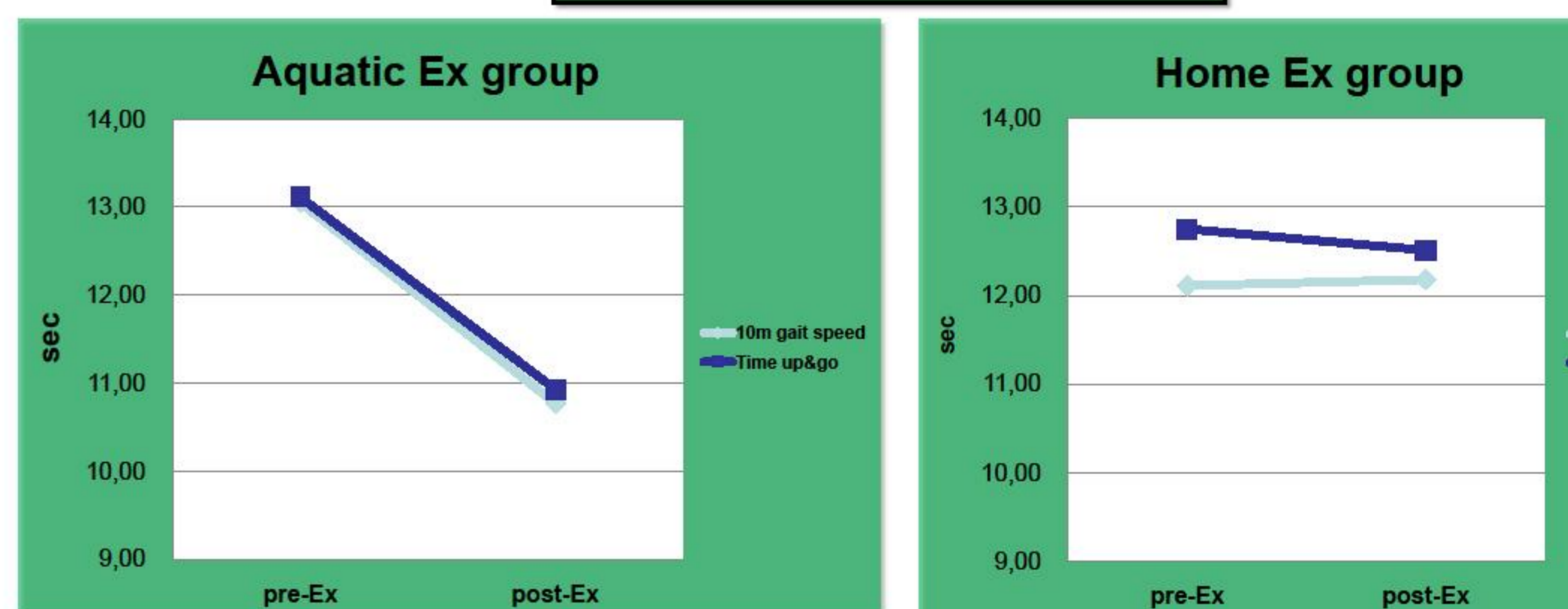
Results

Compared with the control group, The aquatic exercise group showed the better results such as muscle strength (left: 11.1% to 12.4%, right: 8.4%), one legged stance time (left: 3.79sec to 4.58sec, right: 4.02sec to 6.87sec), time Up & Go (13.11sec to 10.93sec), gait speed (13.05sec to 10.77sec) and VAS (3.2 to 2.4). However, there is no change before and after exercise in the control group. There was no statistical significance between experimental group and control group(paired t-test).

One legged stance time



10m gait speed & Time Up & Go test



Conclusions

The 8-week of aquatic exercise could improve muscle strength, balance, VAS and gait speed in hemophilia. To determine more various methods of exercise and to concrete protocol of aquatic exercise, it is necessary to include more patients.

