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## Introduction

The incidence of pediatric venous thromboembolism (VTE) is increasing. Accompanying an increase in VTE is the attendant increase in chronic sequelae of VTE, the most frequent of which includes a syndrome of pain and decreased quality of life (QoL), called the post-thrombotic syndrome (PTS). Given that post-thrombotic sequelae develop despite effective anticoagulation, early identification of VTE complications may offer an opportunity for effective intervention especially as children are expected to live 6-7 more decades with PTS.

The pathophysiology of PTS involves thrombus persistence and valvular venous reflux, leading to venous hypertension. Increasing physical activity (PA) may target the hypoxic damage to muscles caused by venous hypertension.

Currently, no data are available regarding physical activity (PA) post-VTE in children and how that relates to the risk of adverse post-VTE sequelae over time. Therefore, as an important first step, we aimed to:

- (1) Assess self-reported PA levels in children at 6 months post-VTE and change over time from acute diagnosis
- (2) Compare activity levels of patients with and without adverse post-VTE sequelae
- (3) Determine predictors of activity limitations after VTE and assess its association with health related quality of life (HRQoL)

## Methods

Data was extracted for 64 children with objectively diagnosed VTE between the ages of 6 months and 21 years, from the ongoing prospective TOP study (clinicaltrials.gov ID NCT03068923) investigating long term thrombotic outcomes of all VTE sites. We quantified physical activity in twenty-six participants who were diagnosed with lower extremity DVT and pulmonary embolism.

We assessed pre-, 3, and 6 months post-VTE PA in children between ages 2-17 years with an objectively diagnosed lower extremity DVT and PE, using the Godin activity questionnaire.

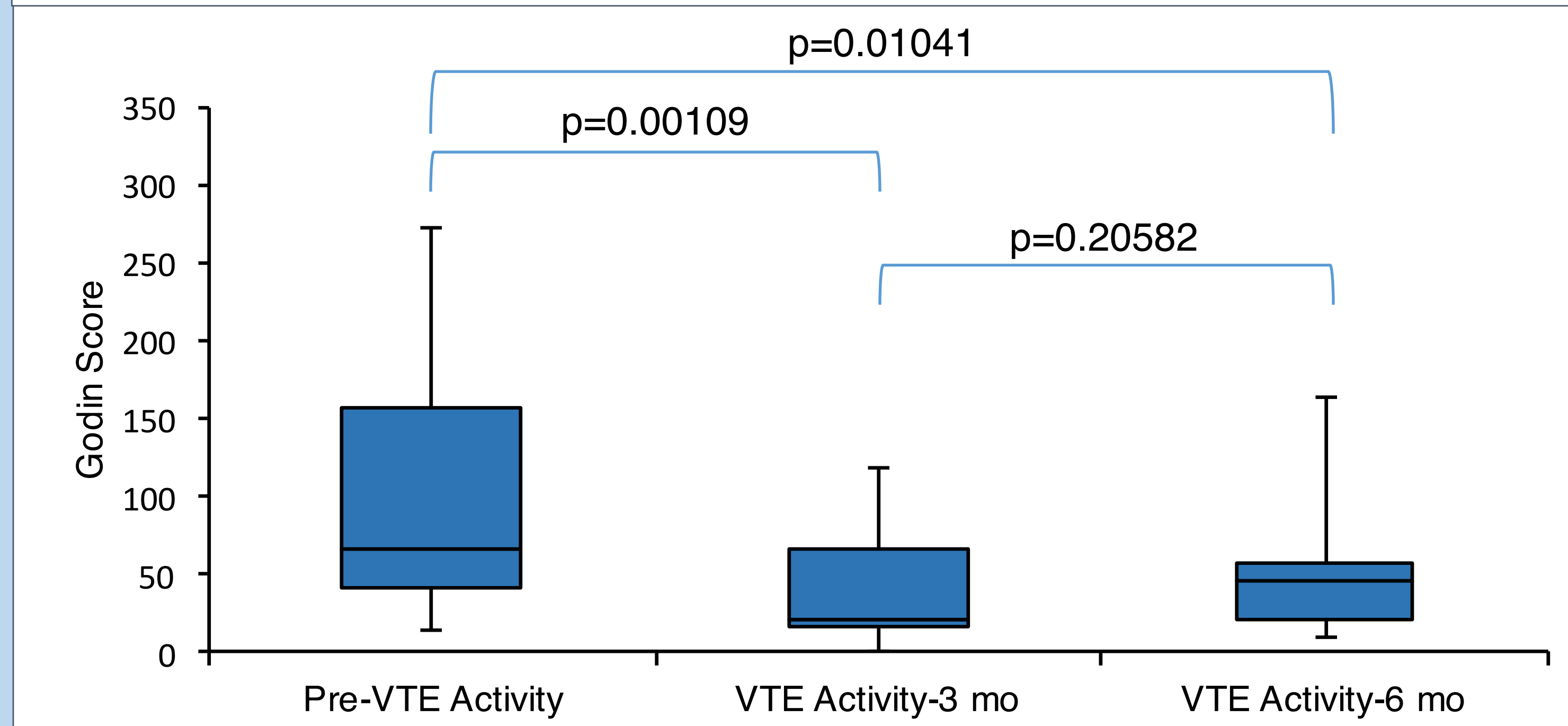
Age, race, ethnicity, gender, BMI, site of VTE, clot burden at diagnosis and follow-up, coagulation activation, dyspnea score, 6-minute walk distance (6MWD), and HRQoL were measured during follow-up.

## Results

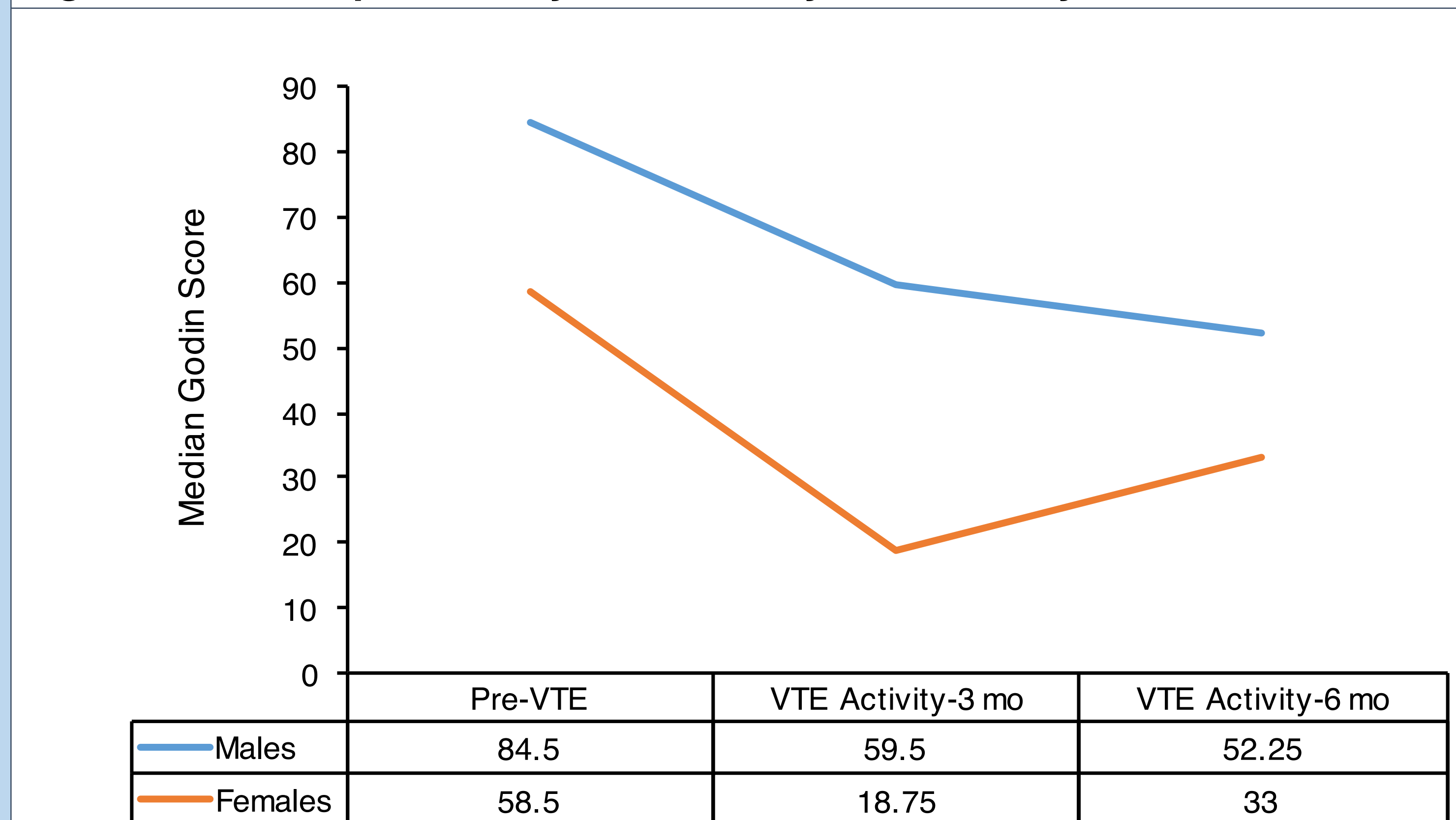
**Table 1: Demographic and Clinical Characteristics of Study Participants**

Variable (N=26)	
Age (yrs.)	
Median (Range)	15 (2-17)
Gender	
Male	12
Female	14
Ethnicity	
Hispanic	7
Non-Hispanic	19
BMI	
Median (Range)	25.1 (15.4-34.08)
VTE-type	
DVT	13
PE	10
DVT and PE	3

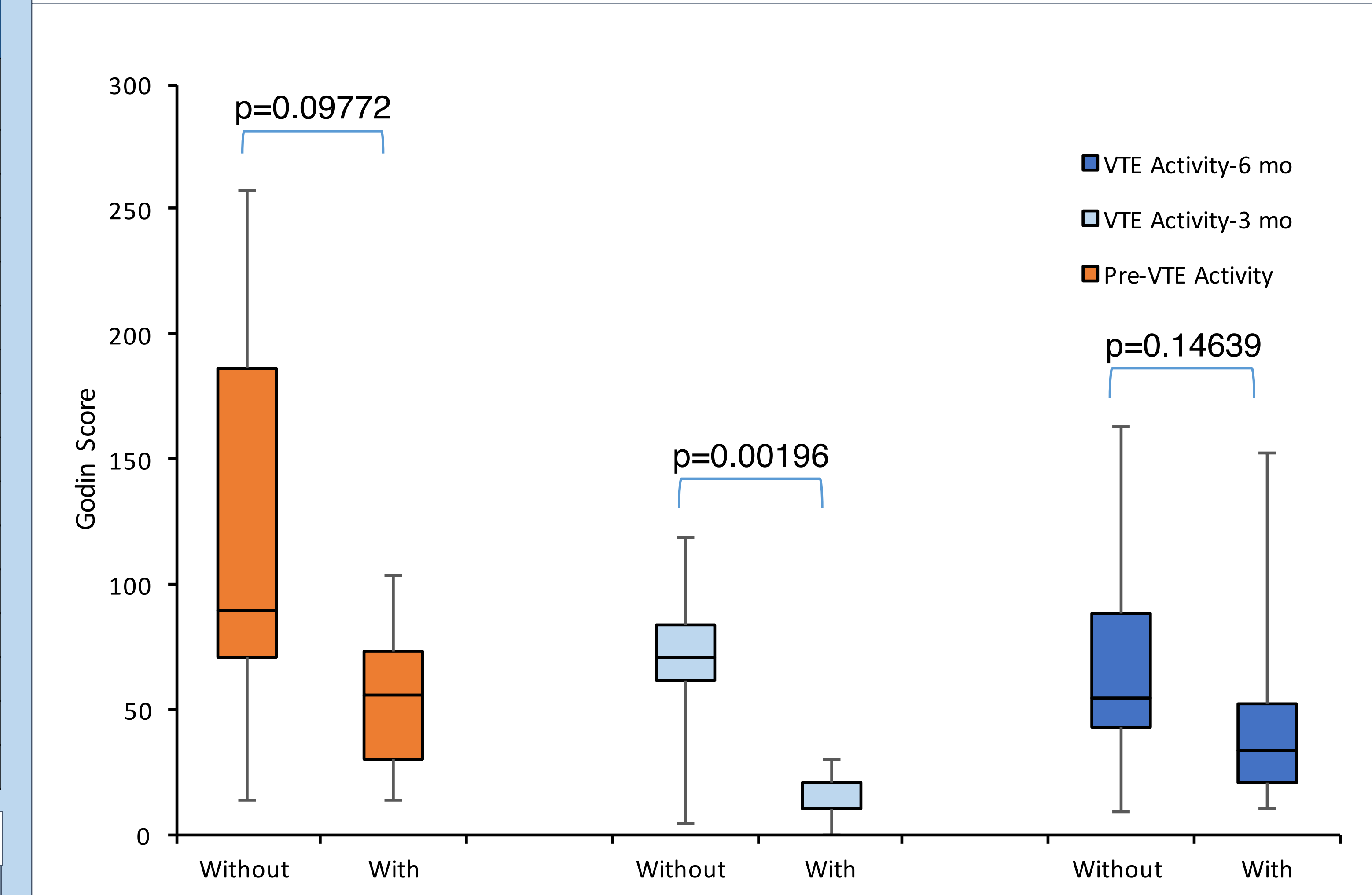
**Figure 1: Self-Reported Physical Activity Over Time**



**Figure 2: Self-Reported Physical Activity Stratified by Gender**



**Figure 3: Self-Reported Physical Activity Stratified by Post-VTE Sequelae**



**Table 2: Variables Associated with Activity Limitations at 6 months**

	Odds Ratio	95% Confidence Interval	P-Value
Complete Radiologic Thrombotic Occlusion at Diagnosis	5.6	3.9-8.6	0.02
Presence of Post-Thrombotic Sequelae at 6 Months Post-diagnosis	7.5	4.7-8.3	0.014

## Conclusions

- Only 42% of children had resumed their usual activity at 6 months after acute, first episode VTE.
  - Resumption of PA post-VTE was lower in females
- Children with adverse VTE sequelae (composite of PTS and post-pulmonary embolism impairment) at 6 months were found to have lower PA at all time points (pre-, 3, and 6 months post-VTE) compared to those without adverse sequelae.
- Participants with completely occlusive thrombosis at the time of acute diagnosis and presence of adverse VTE sequelae were ~6 and ~7 times more likely to have activity limitations, while HRQoL did not predict activity limitations at 6 months post-VTE.

This is the first report quantifying physical activity in children post-VTE. Continual data accrual from our ongoing, prospective study may identify additional risk factors for decreased PA levels in children after VTE, and provide insight into interventions aimed at reducing post-VTE disease burden.