

CHAPTER IV

RESULTS

Results in the current study comprise of two parts. The first part demonstrated the reliability of the height loss measuring stadiometer device. The second part showed the results of the effect of time of day and treadmill running on the VSC response.

Part 1: Reliability test

1.1 Reliability test of digimetic indicator

The results showed that the reliability of the digimetic indicator was very high ($ICC_{1,1} = 1.00$). The raw data were in Appendix C.

1.2 Reliability test of the VSC response measurement

The reliability test of the VSC response measurement was collected from ten subjects: five males and five females. The demographic data of the ten subjects were in Appendix D.

1.2.1 Intra-tester reliability test

The results showed that the intra-tester reliability test of the researcher was high ($ICC_{3,1} = 0.96$). The raw data were in Appendix E.

1.2.2 The standard error of measurement

The results showed that the standard error of measurement (SEM) of the VSC response measured at three times was equal to 0.04 millimeters. The raw data were in Appendix E.

1.2.3 The means of standard deviations test

Each subject was required to attain the desired level of repeatability for the stature measurements ($SD \leq 0.5$ mm) during the familiarization session. Mean of standard deviations of the VSC response measured at 10 times was 0.17 millimeters which was less than the generally acceptable value that was less than 0.5 millimeters. The raw data were in Appendix F.

Part 2: The effect of time of day and treadmill running on the VSC response

Sixty healthy subjects accepted the invitation to participate in the current study. Demographic data of the subjects in each group was reported descriptively by means and standard deviations for age, height, weight and body mass index (Table 1).

Table 1 Demographic data of subjects (N = 60)

Demographic data	Control group (N = 30)	Treadmill running group (N = 30)
Age (years)	21.13 ± 1.04	21.60 ± 1.52
Height (cm)	166.00 ± 7.62	164.00 ± 6.89
Weight (kg)	57.31 ± 7.53	55.34 ± 8.29
BMI (kg/m ²)	20.72 ± 1.80	20.39 ± 1.88

Key: BMI = body mass index, cm = centimeter, kg = kilogram, m = meter

2.1 The magnitude of the VSC response measured in the morning

The difference of the magnitude of the VSC response within group, measured in the morning, in the control group was not statistically significant difference (P = 0.09). However there was a statistically significant difference of the VSC response within group, measured in the morning, in the treadmill running group (P = 0.007) (Table 2).

Table 2 The magnitude of the VSC response measured in the morning in the control and treadmill running groups (mean ± standard deviation) (N = 60)

Groups	The magnitude of the VSC response (millimeters)			P-value
	Before	After	Difference	
Control	1.79 ± 0.94	2.18 ± 1.22	0.39 ± 1.22	0.09
Treadmill running	1.52 ± 0.82	1.95 ± 0.84	0.43 ± 0.81	0.007*

Key: * = statistically significant (p ≤ 0.05)

2.2 The magnitude of the VSC response measured in the afternoon

The difference of the magnitude of the VSC response within group, measured in the afternoon, in the control group was not statistically significant difference ($p = 0.54$). However, there was a statistically significant difference of the VSC response within group, measured in the afternoon, in the treadmill running group ($p = 0.023$) (Table 3).

Table 3 The magnitude of the VSC response measured in the afternoon of the control and treadmill running groups (mean \pm standard deviation) (N = 60)

Groups	The magnitude of the VSC response (millimeters)			P-value
	Before	After	Difference	
Control	2.03 \pm 1.12	2.14 \pm 1.06	0.11 \pm 0.98	0.54
Treadmill running	1.61 \pm 0.69	1.88 \pm 0.75	0.27 \pm 0.61	0.023 *

Key: * = statistically significant ($p \leq 0.05$)

When comparing between groups, they have no statistically significant difference in the magnitude of the VSC response between the control and treadmill running groups in both morning and afternoon (Table 4).

Table 4 Comparison of the magnitude of the VSC response measured in the morning and afternoon between control and treadmill running groups (mean \pm standard deviation)

Time	The magnitude of the VSC response (millimeters)		P-value
	Control group	Treadmill running group	
Morning	1.79 \pm 0.94	1.52 \pm 0.82	0.23
Afternoon	2.03 \pm 1.12	1.61 \pm 0.69	0.09

2.3 Effect of time of day on the magnitude of the VSC response

The magnitude of the VSC response measured in the morning in both control and treadmill running groups are higher than those measured in the afternoon, but there were not statistically significant difference of time of day on the magnitude of the VSC response (Table 5)

Table 5 Comparison of the magnitude of the VSC response between morning and afternoon within group (mean \pm standard deviation)

Groups	The magnitude of the VSC response (millimeters)			P-value
	Morning session	Afternoon session	Difference	
Control	0.39 \pm 1.22	0.11 \pm 0.98	0.28 \pm 1.50	0.31
Treadmill running	0.43 \pm 0.81	0.27 \pm 0.61	0.17 \pm 1.04	0.39

2.4 Effect of time of day on the magnitude of the VSC response between the control and treadmill running groups

Comparisons of the magnitude of the VSC response between the two groups showed that the magnitude of the VSC response in the treadmill running group was higher than in the control group measured both in the morning and in the afternoon but there were no significant difference in VSC response between groups (Table 6 and Figure 11).

Table 6 Comparisons of the magnitude of the VSC response between the control and treadmill running groups (mean \pm standard deviation)

Time	The difference of the magnitude of the VSC response (millimeters)			P-value
	Control group	Treadmill running group	Difference	
Morning	0.39 \pm 1.22	0.43 \pm 0.80	0.04 \pm 0.27	0.87
Afternoon	0.11 \pm 0.98	0.27 \pm 0.61	0.16 \pm 0.21	0.46

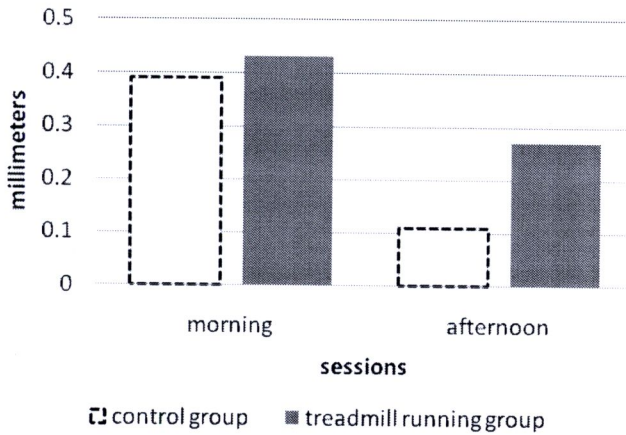


Figure 11 The magnitude of the VSC response between control group and treadmill running group measured in the morning and in the afternoon

The current study used the height loss measuring stadiometer which is a highly reliable device for investigating the VSC response. The results showed that the effect of time of day had no statistically significant effect on the magnitude of the VSC response in the both groups. And the magnitude of the VSC response compared between groups was not significantly different in both measurement sessions (morning and afternoon).