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The Impact of Myofascial Release over Pregnancy-Induced Pelvic Girdle Pain

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ABSTRACT

Background: Pregnancy-induced pelvic girdle pain (PPGP) is one of the most common discomforts in pregnant women, Myofascial release (MFR) appears to be effective in relieving this discomfort.
Objective: The objective of this study is to determine the effectiveness of Myofascial release in reducing pregnancy-induced pelvic girdle pain.
Methodology: A quantitative research model in the form of a Quasi experimental type design was carried out in this study. Convenient sampling of 43 participants among the pregnant women was collected from Physiotherapy Unit in Hospital Seberang Jaya, Penang, Malaysia. Data was collected by structural and semi-structural, mixed type questionnaire. Data analysis was performed by numerical coding. Descriptive statistic was used for data analysis. Tabulation and computation of Frequencies and percentages were calculated on selected variables. SPSS version 20.0 statistical software has been used for data analysis in this study. According to the data analysis, it was shown that Myofascial release is effective in relieving pain significantly. However, based on the clients' testimonial, it only provides short-term effect rather than a long lasting effect. They claimed that after each treatment, there was significant reduction in pain over pelvic girdle, but after few hours (the duration differs from person to person), the pain would return gradually as they started working on their daily tasks (sitting in office, doing house chores, walking around etc).

Key words: Myofascial Release, Pregnancy-Induced Pelvic Girdle Pain.

1. INTRODUCTION

Overview

Starting the 4th century BC, pelvic girdle pain which occurs during and after pregnancy has been recognized and noted as an entity by Hippocrates. (Kanakaris, Roberts & Giannoudis, 2011) [1, 2].
Its common discomforts which happen during or even after pregnancy. It is so common that it happens from as low as 7% to as high as 84% of the prevalence rates reported by most of the literatures in Europe which described the epidemiology of PPGP. Due to the high prevalence rate, there was increased number of publications related to PPGP since the last two decades. Many researches were conducted out of the interest on this topic. This is due to multiple methodological restrictions faced by studies conducted on PPGP. This in turn resulting in difficulties to come to a conclusion that is agreed by all. (Ceprnja D, et al. 2017)[3, 4]
Myofascial release (MFR) is a manual fascial therapy (MFT) which helps to reduce facial restriction and to restore tissue flexibility. Myofascial release is always applied according to the core of Myofascial technique, which was provided by Michael Stanborough, it was a concise description of application: [5, 6]
•Apply slight tension onto it.
•drag the fascia over skin while keep in contact with the underlying layers. [7]
It is believed that a powerful yet nurturing touch is the vital part in achieving the goals of releasing deep fascial. [8]
In Myofascial release, therapist barely uses any lubrication such as massage oil or powder. This is because Myofascial release focuses on "grabbing" the tissue instead of sliding over it which is normally applied in conventional massage. Application of lubrication would make the grabbing and lengthening the shortened fascial difficult. When too much force is placed on the soft tissue, the client can easily feel discomfort or pain and the practitioner can get tired easily or risk of injury may be there. [9, 10].

2. METHODOLOGY

Myofascial release with the technique of compression with movement has been chosen for this study in Hospital Seberang Jaya, Pulau Pinang. Quantitative research model in the form of a quasi-experimental type design were sample is calculated using single proportion formula with consideration of 50% prevalence, marginal error of 5 and 95% confidence. Sample size, single proportion formula uses a prevalence of 50% for calculation. Then P is set to 50 and at 95% CI with 5% tolerable error and non-response of 10%. The study is completed in within the time frame of 1 year with the treatment duration 3 times per week for 8 weeks with 40 minutes of duration each session.
n = (□2)2 x (1-p)2
Where: n = sample size,

Z = standard normal distribution corresponding to significance level at a = 0.05,
P = expected proportion (50%),
d = margin of error (+5%).
Then,
n = (a2) 2x (1-p) d2 = n = (1.96) 2 x 0.5(1-0.5) 0.052 = 48,
= 48 - non-response of 10% = 43
Myofascial release with the technique of compression with movement has been chosen for this study. [11] Oblique pressure with active movement is the fundamental skill performed in this technique. It focuses on stretching a particular point rather than stretching the whole muscle. [12] The therapist uses palpation and observation to identify areas which are adhesive and tight. Then, the therapist first anchors the adhesive area, then uses the knuckles or thumbs to stretch the fascia away from the anchor point to release the tightness. [13, 14, 15]. Oumayma Oueslati, Ahmed Ibrahim S. Khalil, Habib Ounelli in Sentiment Analysis for Helpful Reviews Prediction suggested Gathering only the helpful reviews would reduce information processing time and save effort [16]. Priyanka Thakur and Dr. Rajiv Shrivastava in A Review on Text Based Emotion Recognition System suggested that analysis is focused on the extraction of emotions and opinions of the people towards a particular topic from a structured, semi-structured or unstructured textual data [17].

3. RESULTS

There was a statistically significant difference between groups as determined by one-way ANOVA (F (3, 39) = 24.350, p = 0.000)[Table 1,Figure 1]. The null hypothesis is rejected; pregnancy week is associated with VAS before treatment [Table 2, Figure 2]. A Tokay post hoc test revealed that VAS before treatment was statistically significantly lower during the 12-15 pregnancy week (4.00 ± 0.000) as compared to 16-19 pregnancy week (5.08 ± .669, p = 0.006), 20-23 pregnancy week (6.23 ± .612, p = 0.000) and 24-27 pregnancy week (6.00 ± 1.00, p = 0.000)[Table 3,Figure 3]. There was also statistically significantly lower in VAS before treatment during 16-19 pregnancy week (5.08 ± 0.669) as compared to 20-23 pregnancy week (6.23 ± 0.612, p = 0.000). There was a statistically significant difference between groups as determined by one-way ANOVA (F (4, 38) = 3.881, p = 0.010) [Table 4, figure 4]. The null hypothesis is rejected; aggravating factors is associated with VAS before treatment. A turkey post hoc test revealed that VAS before treatment was statistically significantly higher in prolonged standing (5.65 ± .862, p = 0.022) and prolonged sitting (6.00 ± 0.913, p = 0.004) as compared to supine lying (4.20 ± 0.447.[Table5,Figure 5]: There was significant difference between groups as determined by one-way ANOVA (F (2, 40) = 3.884, p = 0.029)[Table6,Figure 6]. The null hypothesis is rejected; climbing stairs regularity is associated with VAS before treatment [Table 7, Figure7]. A turkey post hoc test revealed that VAS before treatment was statistically significantly higher in climbing stairs sometimes (7.00 ± 0.000, p = 0.04) as compared to climbing stairs often (5.25 ± 0.967). Table 8: According to Levene's test, the value for equality of variances assumed is 0.284, toilet is not associated with VAS before treatment since p= 0.798[Table9]. This can be shown by the mean VAS before treatment of sitting toilet (5.57) and squatting toilet (5.67) are approximately the same. Table 10: According to the results obtained from the paired sample T-test, as the p = 0.00[Table11]. There was significant difference between VAS before treatment and VAS after treatment [Table12]. This can be shown by the mean of VAS before treatment (5.58) and VAS after treatment (3.21), which shows a significant difference in the mean value.[Table 13 & 14]

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Complete	39	90.7	90.7	90.7
	Withdraw	4	9.3	9.3	100.0
	Total	43	100.0	100.0	

Table 1: Frequency Representation based on Treatment Completion.

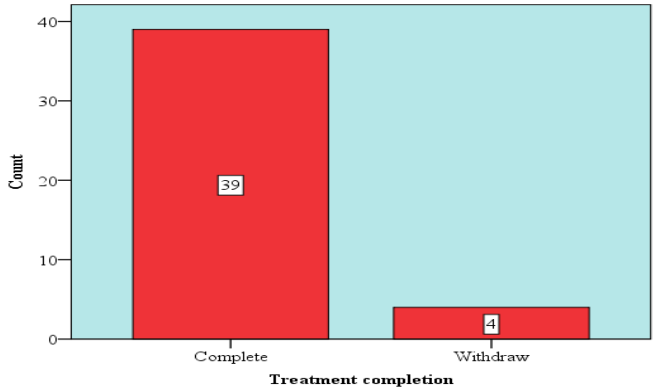

Figure 1: Frequency Representation based on Treatment Completion.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	White-collar worker	25	58.1	58.1	58.1
	Blue-collar worker	10	23.3	23.3	81.4
	Housewife	8	18.6	18.6	100.0
	Total	43	100.0	100.0	

Table 2: Frequency Representation based on Occupation.

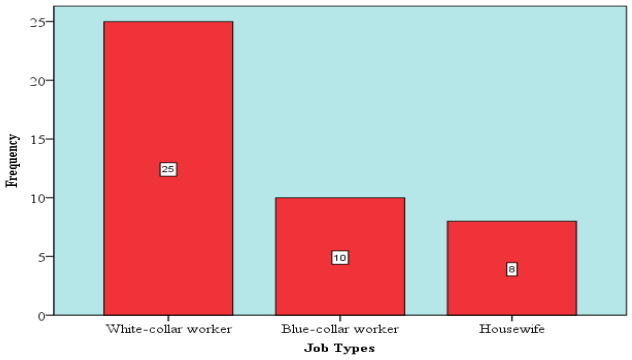

Figure 2: Frequency Representation based on Occupation.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sitting	21	48.8	48.8	48.8
	Standing	16	37.2	37.2	86.0
	Walking	2	4.7	4.7	90.7
	Non-specific	4	9.3	9.3	100.0
	Total	43	100.0	100.0	

Table 3: Frequency Representation based on Working Position.

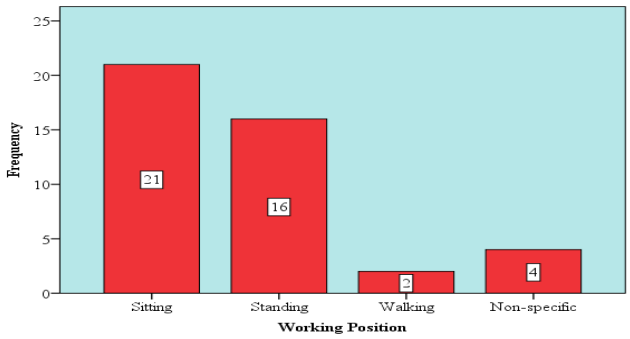

Figure 3: Frequency Representation based on Working Position.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	12-15	2	4.7	4.7	4.7
	16-19	15	34.9	34.9	39.5
	20-23	23	53.5	53.5	93.0
	24-27	3	7.0	7.0	100.0
	Total	43	100.0	100.0	

Table 4: Frequency Representation of Pregnancy Week Range.

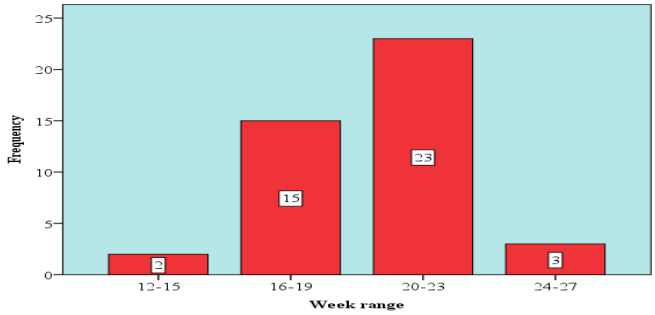

Figure 4: Frequency Representation of Pregnancy Week Range.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Prolonged standing	17	39.5	39.5	39.5
	Prolonged sitting	13	30.2	30.2	69.8
	Supine lying	5	11.6	11.6	81.4
	Turning side-to-side	3	7.0	7.0	88.4
	Non-specific	5	11.6	11.6	100.0
	Total	43	100.0	100.0	

Table 5: Frequency Representation of Aggravating Factor of PPGP.

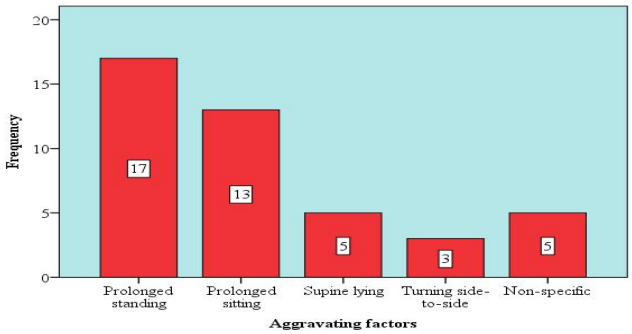

Figure 5: Frequency Representation of Aggravating Factors of PPGP.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	10	23.3	23.3	23.3
	No	33	76.7	76.7	100.0
	Total	43	100.0	100.0	

Table 6: Frequency Representation of History of Caesarian Section.

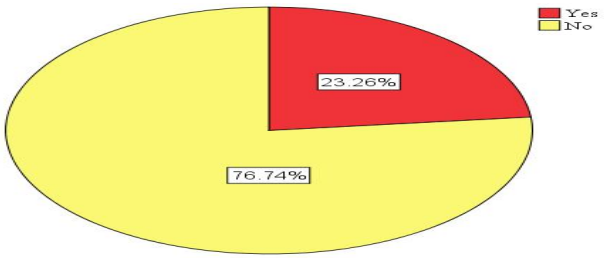

Figure 6: Frequency Representation of History of Caesarian Section.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Often	20	46.5	46.5	46.5
	Sometimes	2	4.7	4.7	51.2
	Never	21	48.8	48.8	100.0
	Total	43	100.0	100.0	

Table 7: Frequency Representation of Stairs Climbing Regularity.

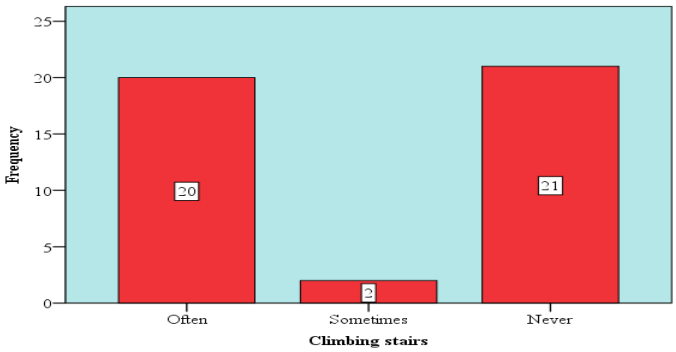

Figure 7: Frequency Representation of Stairs Climbing Regularity.

Descriptives

VAS before

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
White-collar worker	25	5.64	1.036	.207	5.21	6.07	4	7
Blue-collar worker	10	5.60	.966	.306	4.91	6.29	4	7
Housewife	8	5.38	1.061	.375	4.49	6.26	4	7
Total	43	5.58	1.006	.153	5.27	5.89	4	7

Test of Homogeneity of Variances

VAS before

Levene Statistic	df1	df2	Sig.
.102	2	40	.903

ANOVA

VAS before

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.430	2	.215	.205	.816
Within Groups	42.035	40	1.051		
Total	42.465	42			

Table 8: One-Way ANOVA Representing Association between Occupation and VAS before treatment.

Descriptives

VAS before

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Sitting	21	5.71	1.102	.240	5.21	6.22	4	7
Standing	16	5.56	.814	.203	5.13	6.00	4	7
Walking	2	6.00	1.414	1.000	-6.71	18.71	5	7
Non-specific	4	4.75	.957	.479	3.23	6.27	4	6
Total	43	5.58	1.006	.153	5.27	5.89	4	7

Test of Homogeneity of Variances

VAS before

Levene Statistic	df1	df2	Sig.
.845	3	39	.478

ANOVA

VAS before

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3.492	3	1.164	1.165	.335
Within Groups	38.973	39	.999		
Total	42.465	42			

Table 9: Table 10: One-Way ANOVA Representing Association between Working Position and VAS before treatment.

Descriptives

VAS before

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
12-15	6	4.00	.000	.000	4.00	4.00	4	4
16-19	12	5.08	.669	.193	4.66	5.51	4	7
20-23	22	6.23	.612	.130	5.96	6.50	5	7
24-27	3	6.00	1.000	.577	3.52	8.48	5	7
Total	43	5.58	1.006	.153	5.27	5.89	4	7

Test of Homogeneity of Variances

VAS before

Levene Statistic	df1	df2	Sig.
2.692	3	39	.059

ANOVA

VAS before

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	27.685	3	9.228	24.350	.000
Within Groups	14.780	39	.379		
Total	42.465	42			

Multiple Comparisons

Dependent Variable: VAS before
Tukey HSD

(I) Week range	(J) Week range	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
12-15	16-19	-1.083*	.308	.006	-1.91	-.26
	20-23	-2.227*	.284	.000	-2.99	-1.47
	24-27	-2.000*	.435	.000	-3.17	-.83
16-19	12-15	1.083*	.308	.006	.26	1.91
	20-23	-1.144*	.221	.000	-1.74	-.55
	24-27	-.917	.397	.114	-1.98	.15
20-23	12-15	2.227*	.284	.000	1.47	2.99
	16-19	1.144*	.221	.000	.55	1.74
	24-27	.227	.379	.931	-.79	1.24
24-27	12-15	2.000*	.435	.000	.83	3.17
	16-19	.917	.397	.114	-.15	1.98
	20-23	-.227	.379	.931	-1.24	.79

*. The mean difference is significant at the 0.05 level.

Table 10: One-Way ANOVA Representing Association between Pregnancy Week and VAS before treatment.

Descriptives

VAS before

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Prolonged standing	17	5.65	.862	.209	5.20	6.09	4	7
Prolonged sitting	13	6.00	.913	.253	5.45	6.55	4	7
Supine lying	5	4.20	.447	.200	3.64	4.76	4	5
Turning side-to-side	3	5.33	.577	.333	3.90	6.77	5	6
Non-specific	5	5.80	1.304	.583	4.18	7.42	4	7
Total	43	5.58	1.006	.153	5.27	5.89	4	7

Test of Homogeneity of Variances

VAS before

Levene Statistic	df1	df2	Sig.
1.503	4	38	.221

ANOVA

VAS before

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	12.316	4	3.079	3.881	.010
Within Groups	30.149	38	.793		
Total	42.465	42			

Multiple Comparisons

Dependent Variable: VAS before
Tukey HSD

(I) Aggravating factors	(J) Aggravating factors	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Prolonged standing	Prolonged sitting	-.353	.328	.818	-1.29	.59
	Supine lying	1.447*	.453	.022	.15	2.74
	Turning side-to-side	.314	.558	.980	-1.28	1.91
	Non-specific	-.153	.453	.997	-1.45	1.14
Prolonged sitting	Prolonged standing	.353	.328	.818	-.59	1.29
	Supine lying	1.800*	.469	.004	.46	3.14
	Turning side-to-side	.667	.571	.769	-.97	2.30
	Non-specific	.200	.469	.993	-1.14	1.54
Supine lying	Prolonged standing	-1.447*	.453	.022	-2.74	-.15
	Prolonged sitting	-1.800*	.469	.004	-3.14	-.46
	Turning side-to-side	-1.133	.650	.421	-3.00	.73
	Non-specific	-1.600	.563	.053	-3.21	.01
Turning side-to-side	Prolonged standing	-.314	.558	.980	-1.91	1.28
	Prolonged sitting	-.667	.571	.769	-2.30	.97
	Supine lying	1.133	.650	.421	-.73	3.00
	Non-specific	-.467	.650	.951	-2.33	1.40
Non-specific	Prolonged standing	.153	.453	.997	-1.14	1.45
	Prolonged sitting	-.200	.469	.993	-1.54	1.14
	Supine lying	1.600	.563	.053	-.01	3.21
	Turning side-to-side	.467	.650	.951	-1.40	2.33

*. The mean difference is significant at the 0.05 level.

Table 11: One-Way ANOVA Representing Association between Aggravating Factors and VAS before Treatment.

Descriptives

VAS before

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Often	20	5.25	.967	.216	4.80	5.70	4	7
Sometimes	2	7.00	.000	.000	7.00	7.00	7	7
Never	21	5.76	.944	.206	5.33	6.19	4	7
Total	43	5.58	1.006	.153	5.27	5.89	4	7

Test of Homogeneity of Variances

VAS before

Levene Statistic	df1	df2	Sig.
2.304	2	40	.113

ANOVA

VAS before

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	6.906	2	3.453	3.884	.029
Within Groups	35.560	40	.889		
Total	42.465	42			

Multiple Comparisons

Dependent Variable: VAS before

Tukey HSD

(I) Climbing stairs	(J) Climbing stairs	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Often	Sometimes	-1.750*	.699	.04	-3.45	-.05
	Never	-.512	.295	.20	-1.23	.21
Sometimes	Often	1.750*	.699	.04	.05	3.45
	Never	1.238	.698	.19	-.46	2.94
Never	Often	.512	.295	.20	-.21	1.23
	Sometimes	-1.238	.698	.19	-2.94	.46

*. The mean difference is significant at the 0.05 level.

Table 12: One-Way ANOVA Representing Association between Climbing Stairs Regularity and VAS before Treatment.

Group Statistics

	Type of toilet	N	Mean	Std. Deviation	Std. Error Mean
VAS before	Sitting	37	5.57	1.042	.171
	Squatting	6	5.67	.816	.333

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig	t	df	Sig (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
VAS before	Equal variances assumed	1.177	.284	-.2	41	.826	-.099	.448	-1.003	.805
	Equal variances not assumed			-.3	7.91	.798	-.099	.375	-.965	.767

Table 13: Independent Sample T-test Representing Association between Type of Toilet and VAS before Treatment.

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	VAS before	5.58	43	1.006	.153
	VAS after	3.21	43	.888	.135

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	VAS before & VAS after	43	.714	.000

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	VAS before - VAS after	2.372	.725	.110	2.149	2.595	21.469	42	.000

Table 14: Paired T-test Representing Association between VAS before Treatment and VAS after Treatment.

4. CONCLUSION

As a conclusion, Myofascial release is effective in relieving pregnancy-induced pelvic girdle pain. This conclusion was drawn from the statistics shown in the SPSS after the data analysis was done. The results showed that the VAS had significant reduction after each and every treatment. Although the VAS reduction differs in terms of level of reduction (some reduced by 2, some by 3 or other numbers), but generally, the VAS reduced after Myofascial release was applied on pregnant women who had pregnancy-induced pelvic girdle pain. Data analysis from SPSS showed that the regularity of climbing stairs affects the VAS of pelvic girdle pain.

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