CHAPTER V
DISCUSSION

5.1 Characteristics of Subjects

Subjects in this study had normal distribution in age, weight and body mass index. Subjects who participated in this study must have body mass index between 18.5 and 23 kg/m^2 which shown normal range of body mass index for Asian population[89]. That means this project result may possibly generalize to Asian population.

5.2 Stabilization Exercise Program

Lumbar stabilization exercises are commonly used in the physical therapy clinics. Physical therapists use this exercise to train local stabilizer muscle in order to increase spinal stabilization. Hagins and his colleagues used modified isometric stability test (IST) to evaluate the effectiveness of a four-week stabilization exercise program with weekly reinstruction and testing [9]. Their result indicated that subjects could improve the ability to perform progressive lumbar stabilization exercise. Their exercise program consists of seven levels of exercise. Thongjunjua and her colleagues used lumbar stabilization exercise program which consisted of six progressive exercises to evaluate exercise level attained in 30 healthy subjects after exercise for four weeks[20].

In this study, subjects were tested their the exercise level attained with the six-level of lumbar stabilization exercise program[20]. This exercise program gradually increased the muscular control with the highest level the subject could perform indicating the appropriate exercise level for training.

5.3 Ability to Perform Lumbar Stabilization Exercise

This exercise activates back extensor and abdominal muscles. While performing exercise, contraction of muscle will stabilize spine to reduce pain and disability[3, 11, 41, 58, 82, 90]. But to date, the literature review has not described a

reference levels for young adults. The results of this study suggest that the most exercise level attained which the most of all participants can achieve in first, second and third testing is level 2. This finding supported the study of Thongjunjua et al in 2007. They studied 30 healthy volunteers who received lumbar stabilization exercise program for four weeks. The result showed that the median of exercise level attained in testing before training was level two[20]. However, from the present study found that the highest exercise level attained in each participant was level three. This exercise level attained was not the effect from test practice effect because not all subjects could achieve exercise level attained in level three in the third testing.

Lumbar stabilization exercise is not only used as treatment in spinal instability but also used to prevent spinal instability. For this reason, when we know the exercise level attained in young healthy adults it is useful for prevent spinal instability condition in this population group. Physical therapist should prescribe level three and higher levels of exercise to non low back pain patients in order to prevent local stabilizer muscle weakness which results of spinal instability. Levels lower than level three may indicate local muscle stabilizer weakness and/or spinal instability, which may be a predisposing factor of low back pain in the future[58].

While testing the lumbar stabilization exercise, the participant was required to perform the exercise without changing the pressure gauge dial from 40$\pm$4 mmHg and not allowed compensation to occur. Pressure gauge errors or compensation error alone or concurrent between pressure gauge and compensation errors indicating the failed test. The researcher taught the subjects to perform co-contraction of transversus abdominis and lumbar multifidus by “draw your lower abdomen in and pull your navel up” while maintaining the spine in a static neutral position. The most common compensation errors were holding the breath, posterior tilting of pelvis, elevation of the rib cage, protrusion of rectus abdominis and elevation of the shoulders, respectively.

5.4 Clinical Implication and Further Studies

The finding of this study suggested that the reference values of exercise level attained for lumbar stabilization exercises is level three, which may be used as reference values of exercise level attained for lumbar stabilization exercises in healthy

female. Physical therapist should prescribe level three and higher levels of exercise to non low back pain patients in order to prevent local stabilizer muscle weakness. Levels lower than level three may indicate local muscle stabilizer weakness and/or spinal instability, which may be a predisposing factor of low back pain in the future.

Further studies should evaluate the reference values of exercise level attained for lumbar stabilization exercises in other age ranges.