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主な研究テーマ

□高齢者の健康づくり（水中運動から陸上運動まで）

平成28年度の研究内容とその成果

1. 水中運動の概要（共同研究：*International Journal of Aquatic Research and Education*, 10, 01-22, 2016). Title: Aquatic Exercise for Better Living on Land: Impact of Shallow-Water Exercise on Older Japanese Women for Performance of Activities of Daily Living (ADL).

Abstract: Twenty-six Japanese women (70.5 yr) self-selected water exercise (WEX) (n=13), or control (CON) (n=13) for 12 weeks. WEX was performed 60-minutes/day, 3 days/week with warm-up, cool-down stretch, ADL exercises, and cardiovascular/muscular endurance in 30°C water at a xiphoid level depth. CON continued their current activity/nutrition patterns. Compared to CON, WEX improved ( $p<.05$ ) functional fitness and balance measures including arm curl (22%), chair stand (21%), 8-feet up & go (13%), chair sit/reach (50%), and 12-min walk (15%). No significant changes in sway velocity (SV) or limits of stability (LOS) were seen for either group. This

shallow water exercise improved land-based ADL for older women but not balance. ADL tasks associated with balance did improve which may have indicated enhanced motor control.

Keywords: aquatic exercise, activities of daily living (ADL), functional exercise, balance, older adults

2. 陸上運動の概要（共同研究：*Sports*, 2017, 5(2), 32; doi:10.3390/sports5020032)

Title: Effects of 12 weeks of Tai Chi Chuan training on balance and functional fitness in older Japanese adults.

Abstract: The purpose of this study was to determine the effects of Tai Chi Chuan on static and dynamic balance, and functional fitness in older adults. Forty-nine volunteers were divided into an exercise group (EX: 9 men and 16 women, average age  $72 \pm 5$  years) and control group (13 men and 11 women, average age  $73 \pm 6$  years). The EX participated in a 12-week supervised exercise program (60 min/day, 2 days/week) that consisted of 10-min warm-up and stretching, 40-

min Tai Chi Chuan exercise (long-form Yang style with 108 movements), and 10-min cool-down/relaxation exercises. The control group was asked to not change their physical activity habits. Static (sway velocity standing on firm or foam surfaces with eyes open or closed) and dynamic balance (limits of stability (LOS)), as well as functional fitness measures of body mass; upper- and lower-body strength; and flexibility, mobility, and aerobic fitness were taken before and after the intervention. After the 12-week Tai Chi Chuan exercise program, there were no improvements in any functional fitness or balance variable although components of LOS tended to increase (13.1%,  $p = 0.052$ ). These results indicate that 12 weeks of Tai Chi Chuan exercise has no significant effect on balance and functional fitness parameters in older Japanese adults.

Keywords: Tai Chi Chuan; effect on static and dynamic balance; functional fitness; older adults

#### **Peer-reviewed Publication in Journal**

1. Rogers M. E., N.L. Rogers, E. Fujita, **M. M. Islam**, and N. Takeshima. Muscle strength and size gains in older women after four and eight weeks of high-intensity resistance training. *International Journal of Physical Education and Applied Exercise Science* (in press)
2. Takeshima N., **M. M. Islam**, Y. Kato,

D. Koizumi, M. Narita, Y. Kitabayashi, N. L. Rogers and M. E. Rogers. Effects of 12 weeks of Tai Chi Chuan training on balance and functional fitness in older Japanese adults. *Sports*, 2017, 5(2), 32; doi: 10.3390/sports5020032

3. Sanders M. E., **M. M. Islam**, A. Naruse, N. Takeshima, and M. E. Rogers. Aquatic Exercise for Better Living on Land: Impact of Shallow-Water Exercise on Older Japanese Women for Performance of Activities of Daily Living (ADL). *International Journal of Aquatic Research and Education*, 10, 01-22, 2016

#### **Proceeding Paper and Research Report**

1. **Islam M. M.**, T. Suehiro, B. K. Riaz, H. Yano, M. S. Islam, and Y. Tsutsumi. Magnitude of public health issues as well as scope of social business associated with medical waste management in Dhaka city. *Proceedings of the 1st Conference on Healthcare, SDGs & Social Business* (held in Tokyo, Japan: February, 2017), pp25-26, 2017

#### **Professional Presentation at Scientific Meetings (Presenting Author)**

1. **Islam M. M.**, T. Suehiro, B. K. Riaz, H. Yano, M. S. Islam, and Y. Tsutsumi. Magnitude of public health issues as well as scope of social business associated with medical waste management in Dhaka city. The 1st Conference on Healthcare,

SDGs & Social Business, Tokyo, Japan, February, 2017

### **Professional Presentation at Scientific Meeting (Co-author)**

1. Hasegawa, R., **M. M. Islam**, and N. Tomiyama. Peer-instructed, sustainable community-based exercise groups for older people fulfill the aims of Integrated Community Care in Japan. *Occupational Therapy Australia 27th National Conference and Exhibition 2017*. Held in Perth, Western Australia, 19-21 July, 2017

2. Nakashima, D., H. Watanabe, F. Goto Fumihiko, D. Kimura, N. Tomiyama, and **M. M. Islam**. Physical, psychological, and cognitive factors that have higher influences on physical activity in community-dwelling oldest-old women. *Occupational Therapy Australia 27th National Conference and Exhibition 2017*. Held in Perth, Western Australia, 19-21 July, 2017

3. Goto, F., H. Watanabe, D. Nakashima, **M. M. Islam**, and R. Hasegawa. Effects of group-based resistance exercise on social networking and mental depression in older adults. *Occupational Therapy Australia 27th National Conference and Exhibition 2017*. Held in Perth, Western Australia, 19-21 July, 2017 (accepted for electronic poster (ePoster) presentation)

4. Watanabe, H., F. Goto, D. Nakashima, **M. M. Islam**, and R. Hasegawa. Effects of elastic band-based resistance exercises on impaired cognition in community-dwelling

older adults having mild cognitive impairment. *Occupational Therapy Australia 27th National Conference and Exhibition 2017*. Held in Perth, Western Australia, 19-21 July, 2017

5. Sakakura, M., Takahashi, K., Kanai, A, and Islam M.M. (Corresponding Author). The Immediate Effects of MR for the Lateral Femoral Intermuscular Septum ~ Possibility of MR as a mode of pre-conditioning ~. *1<sup>st</sup> International Conference of NIFS International Sport Academy*. Held in Kanoya, Kagoshima, Japan, 22 September, 2017

6. Takahashi, K., Sato, S., Iwatani, M., Kato, Y. and Islam M.M. Health Promotion Activities of Mie Physical Therapy Association through Public Utilities Department. *1<sup>st</sup> International Conference of NIFS International Sport Academy*. Held in Kanoya, Kagoshima, Japan, 22 September, 2017

### **Special Lectures (社会貢献)**

1. Water bottle-based resistance exercise may reduce the amount of care needed in old age. Organized by *Kaiseien Nursing Home on its 43th Foundation Anniversary*, Osaki Town, Kagoshima, Japan, July, 2017 「介護予防のためのペットボトル体操。特別養護老人ホーム回生園創立43周年記念講演会。鹿児島県大崎町。2017年7月1日」



### これからの研究の展望

強弱な高齢者における筋力づくり。地域  
在住高齢者から施設入所者を対象とした研  
究。