



## 7.0 The Intensity Spectrum

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### The first rule of exercise: Some is better than none

- Takeaway: “Move more, with more intensity, and sit less.”-*American Heart Association*
- Science has linked being inactive and sitting too much with higher risk of heart disease, type 2 diabetes, colon and lung cancers, and early death.
- Click to read more: <https://www.heart.org/en/healthy-living/fitness/fitness-basics/aha-recs-for-physical-activity-in-adults>

### The second rule of exercise: The goal is to progressively adapt

- Adaptation is associated with a greater stimulus than our systems are accustomed to, known as ‘overload’. This overload can be achieved through: resistance, duration, new movements, and intensity, just to name a few.
- Research: Weening-Dijksterhuis, E., de Greef, M. H., Scherder, E. J., Slaets, J. P., & van der Schans, C. P. (2011). Frail institutionalized older persons: A comprehensive review on physical exercise, physical fitness, activities of daily living, and quality-of-life. *American journal of physical medicine & rehabilitation*, 90(2), 156-168.
- Click to read more:  
[https://journals.lww.com/ajpmr/Fulltext/2011/02000/Frail Institutionalized Older Persons A.9.aspx](https://journals.lww.com/ajpmr/Fulltext/2011/02000/Frail_Institutionalized_Older_Persons_A.9.aspx)

**We are going to stick to these 2 simple rules today with a high level of focus on intensity and how to use the spectrum of intensity when creating workouts for your clients.**

### Intensity:

- Use the Aquatic Exercise Intensity Scale.
- All levels of the intensity spectrum should be utilized to optimize adaptation.
- All populations use the spectrum of intensity throughout their daily lives and therefore it is imperative for us to train clients to be ready for these activities and potentially make them easier.
  - What are some examples of this?
  - Do you have any clients that are afraid of falling?
  - In reality, older/compromised populations may use maximal effort more often throughout their standard day.

### Variation in intensity is part of the solution.

- Maximum benefits are noted when both moderate and vigorous intensity are included.
- Intensity variations support many aspects of physical and mental health.
- “Engaging in VIGERIOUS physical activity consistently and substantially protects against functional decline.” -*Wolinsky et.al.*
  - Research: Wolinsky, F. D., Bentler, S. E., Hockenberry, J., Jones, M. P., Obrizan, M., Weigel, P. A., ... & Wallace, R. B. (2011). Long-term declines in ADLs, IADLs, and mobility among older Medicare beneficiaries. *BMC geriatrics*, 11(1), 1-12.
  - Click to read more: <https://link.springer.com/article/10.1186/1471-2318-11-43>
- Research supports “a 3-month high-intensity functional weight-bearing exercise program had an effect on indoor mobility in older people dependent in ADLs, most of whom had severe physical or cognitive impairments.” - Litbrand et. al.
  - Research: Littbrand H, Lundin-Olsson L, Gustafson Y, Rosendahl E. The effect of a high-intensity functional exercise program on activities of daily living: a randomized controlled trial in residential care facilities. *J Am Geriatr Soc.* 2009 Oct;57(10):1741-9.
  - Click to read more: <https://pubmed.ncbi.nlm.nih.gov/19702617/>
- Additional support for the inclusion of both moderate and vigorous activities for older adults and compromised populations can be found through statements made by the [CDC](#), [WHO](#), [ACSM](#)<sub>2</sub> and [AHA](#).

### What activities do you want your clients to be able to do with ease?

- Basic Activities of daily living?



Eating



Bathing



Dressing



Transferring



Toileting



Walking or moving around

- Instrumental ADL's



**How can we create exercise sessions that can train our clients to do these things with greater ease, higher level of competence, and more safely? Let's create a progression.**

1. Select one activity ADL or IADL
2. Choose one exercise that targets the selected ADL or IADL
3. List 3 variations that use intensity to apply progressive overload

Activity	Exercise	Progress to...

Here's an example.

Activity	Exercise	Progress to...
Into and Out of the Car	SQUATS (deep or shallow) with various foot positions	SQUATS High velocity squats Resisted high velocity squats Squat jumps

Let's do another. Create another exercise that would help with one IADL.

Activity	Exercise	Progress to...

Let's do 1 more. Create another exercise that would help with one or more ADL/IADL.

Activity	Exercise	Progress to...

**Using Low Intensity Intervals:**

- We have considered how to progress a movement, but now let's contemplate how we can utilize low intensity exercises. Allowing recovery is as important for adaptation as employing progressive overload.
- We can use interval formats to make recovery sessions more engaging and even add a little intensity to promote maintaining fitness while still promoting recovery

**Let's look at an example**

10 Min low intensity interval set done as 1 min gentle build up 1 min mobility:

1 min ↑ effort every 10 sec 5 → 6 → 7 → 8 (hold at 8/10 for remainder of minute)

1 min mobility: Clock reach with Right toes

1 min ↑ effort every 10 sec 5 → 6 → 7 → 8 (hold at 8/10 for remainder of minute)

1 min mobility: Clock reach with Left toes

1 min ↑ effort every 10 sec 5 → 6 → 7 → 8 (hold at 8/10 for remainder of minute)

1 min mobility: squat and reach across

1 min ↑ effort every 10 sec 5 → 6 → 7 → 8 (hold at 8/10 for remainder of minute)

1 min mobility: heel-toe rocks changing from neutral, internal, external

1 min ↑ effort every 10 sec 5 → 6 → 7 → 8 (hold at 8/10 for remainder of minute)

1 min mobility: Figure 4 Squats

**Now you give it a try! Fill in the blanks with mobility exercises to benefit your clients.**

**Low Intensity interval x 10 minutes @5-8**

1 min ↑ effort every 10 sec 5 → 6 → 7 → 8 (hold at 8/10 for remainder of minute)

1 min mobility: \_\_\_\_\_

1 min ↑ effort every 10 sec 5 → 6 → 7 → 8 (hold at 8/10 for remainder of minute)

1 min mobility: \_\_\_\_\_

1 min ↑ effort every 10 sec 5 → 6 → 7 → 8 (hold at 8/10 for remainder of minute)

1 min mobility: \_\_\_\_\_

1 min ↑ effort every 10 sec 5 → 6 → 7 → 8 (hold at 8/10 for remainder of minute)

1 min mobility: \_\_\_\_\_

1 min ↑ effort every 10 sec 5 → 6 → 7 → 8 (hold at 8/10 for remainder of minute)

1 min mobility: \_\_\_\_\_

**Conclusion:** Adding variations in intensity to programming for nearly all populations, including older adults and compromised populations, is supported. Low, moderate and high intensity exercise is recommended to aid in maintaining and promoting health and independence.

Research: Keating, C. J., Montilla, J. Á. P., Román, P. Á. L., & Del Castillo, R. M. (2020). Comparison of high-intensity interval training to moderate-intensity continuous training in older adults: a systematic review. *Journal of aging and physical activity*, 28(5), 798-807.

Click to read: <https://journals.humankinetics.com/view/journals/japa/28/5/article-p798.xml>