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Research article

ORIENTATION MOBILITY FITNESS PYRAMID FOR INDIVIDUALS WITH VISUAL IMPAIRMENTS

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Abstract

This investigation combined the orientation mobility skills and fitness concepts into levels of a pyramid. The merging of orientation mobility skills with fitness concepts created an educational tool that individuals with visual impairments can use today. This Orientation Mobility Fitness Pyramid designed by the authors will contribute to maintain and improve orientation mobility skills as well as personal fitness for individuals with visual impairments. This review of the literature provided the framework for the personalized pyramid model that will provide an educational guide for educators and individuals with visual impairments. ((Eickhoff-Shemek, Herbert, & Connaughton, 2008; Fisher, 2000; Haegele & Lieberman, 2017; Wiszomirska, Kaczmarczyk, Blazkiewiez, & Wit, 2015; Kronemer, 2016).

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INTRODUCTION

The physical needs of an individual with visual impairments are typically no different than an adult who does not have any visual impairments (Kronemer, 2016). The National Center on Health, Physical Activity, & Disability (NCHPAD, 2008) supports physical activities that can prevent obesity for individuals, young and old, with visual impairments (Haegele & Lieberman, 2017, Kronemer, 2016). It is essential to consider the high percentage of the inactivity in individuals dealing with visual impairments to eliminate their sedentary lifestyles (Kronemer, 2016; Lieberman, Byrne, Mattern, Watt, & Fernandez-Vivo, 2010; Marmeleira, Laranjo, Marques, & Pereira, 2014; Winnick & Poretta, 2017).

It is important that we continue to examine the challenges and environmental barriers that individuals with visual impairments encounter in order to improve orientation & mobility (O & M) skills. Many individuals with visual impairments experience environmental challenges and barriers that may contribute to their lack of inactivity and substandard O & M skills (Marmeleira, Laranjo, Marques, & Pereira, 2014; Sauerburger & Bourquin, 2010). The review of literature in physical activity and orientation & mobility skills contributed to the framework to create the educational tool Orientation & Mobility Fitness Pyramid for individuals with visual impairments. The recommendation of a specialized fitness pyramid model by the authors will relate to the unique needs and abilities of individuals with visual impairments (Eickhoff-Shemek, Herbert, & Connaughton, 2008; Marmeleira, Laranjo, Marques, & Pereira, 2014; Sauerburger & Bourquin, 2010; Winnick & Poretta, 2017).

It is important for individuals with visual impairments to practice safe mobility skills that are essential to their daily living activities. Some examples of orientation and mobility skills are: trailing, squaring off, protective technique, and using sighted guides (Penrod, 2012; Willings, 2017). Utilizing these movement concepts in their everyday lives and adding fitness concepts can contribute to improving their personal fitness and O & M skills (Griffin-Shirley & Bozeman, 2016; Willings, 2017).

There are several factors that can have a positive impact on individuals with visual impairments personal fitness level and improving their O & M skills. Those factors include the size of their accessible communities and their family support (Columna, Dillion, Norris, Dolphin, McCabe, 2017; Good, LaGrow and Alpass, 2008). These factors support the need for more educational tools that educators and families can use to provide a positive environment to improve individuals with visual impairments personal fitness and O & M skills. (Bambara, Wadley, Owsley, Martin, Porter & Dreer, 2009; Cimarolli & Boerner, 2005; Columna,

Dillion, Norris, Dolphin, McCabel, 2017; Griffin-Shirley & Bozeman, 2016; Winnick & Porretta, 2017). Individuals with visual impairments experience more opportunities to practice O & M skills and improve their personal fitness when they have positive family support.

Fitness professionals have designed and proposed various pyramid diagrams through history that summarize and make recommendations on regular physical activity for individuals of all ages (Eickhoff-Shemek, Herbert, & Connaughton, 2008; Fisher, 2000). One of the first pyramid diagrams introduced was the 1995 National Exercise for Life Institute (NEFLI) Fitness Pyramid. This pyramid recommended appropriate frequency amounts for different types of exercise activity and fitness components. The NEFLI Fitness Pyramid (1995) is designed to help guide individuals to understand the various components of physical activity through a tiered triangular approach.

A study by Ball and Gammon (2008) developed the My Activity pyramid for individuals that incorporated the 2008 Physical Activity Guidelines for Americans. The My Activity pyramid base included the same components as the NEFLI Fitness Pyramid (1995). Those components incorporated a large amount of aerobic activity at the base of the pyramid and encouraged individuals to achieve additional health-related benefits by adding the upper levels of strength building, flexibility and balance (Ball & Gammon, 2008).

My Activity Pyramid (2008) and NEFLI Fitness Pyramid (1995) are helpful education tools that provide guidelines for all individuals to achieve their optimal personal fitness goal. The picture of My Activity Pyramid (2008) captures the components of physical fitness and activities an individual needs to achieve at each level of the pyramid (Ball & Gammon, 2008; NEFLI Fitness Pyramid, 1995). The "FITT" (frequency, intensity, time, and type of exercise) can be incorporated into the different tiers of a customized fitness pyramid (Augestad & Jiang, 2015; Winnick & Porretta, 2017). Many individuals with visual impairments can meet the various levels of any of the fitness pyramids and follow the FITT guidelines without modifications (Ball & Gammon, 2008; NEFLI Fitness Pyramid, 1995; Winnick & Poretta, 2017).

The O & M skills and personal fitness for individuals with visual impairments should have pre-assessments to inform what goals and adjustments are needed to improve one's personalized fitness levels. Adjustments to frequency, intensity, and the type of activities would be required to successfully improve one's personal fitness goals as well as improve orientation and mobility

skills for individuals with visual impairments (Ball & Gammon, 2008; Kronemer, 2016; NEFLI Fitness Pyramid, 1995; Winnick & Porretta, 2017).

In Tier 1 of the Orientation & Mobility Fitness Pyramid by Prince & McAllister (2017) focuses on cardiovascular endurance and recommends it be done every day performed for 30 minutes or more (Augestad & Jiang, 2015; Griffin-Shirley & Bozeman, 2016; Winnick & Porretta, 2017). The recommended O & M skills for this personalized fitness base are facilitated and unfacilitated walking patterns that should be practiced daily. These directional traveling patterns are incorporated in Tier 1 of the proposed pyramid. The mastery of traveling patterns help increase adults with visual impairment's confidence levels when they can perform without facilitation from instructors or family (Penrod, 2012; Sauerburger & Bourquin, 2010). The practicing of traveling patterns with dogs, canes, facilitated and unfacilitated walking routes daily will improve their fitness and O and M skills that have been incorporated in Tier 1. The Orientation and Mobility Fitness Pyramid Prince & McAllister (2017) proposed educational tool is located in the appendix.

Tier 2 of the Orientation Mobility Fitness Pyramid Prince & McAllister (2017) continues working on cardiovascular fitness principles by adding rhythmic and musical activities incorporated with the facilitated and unfacilitated traveling O & M skills. Examples of rhythmic activities to consider include facilitated and unfacilitated walking patterns using music, jumping with voice commands, rhythmic tapping of cane to walking strides, skipping to music, increase tempo of walking with cane and dog, and participating in an exercise class that incorporates musical and voice commands (Penrod, 2012; Sauerburger & Bourqin, 2010). The facilitated and unfacilitated rhythmic activities are recommended to do four to five times a week.

Tier 3 of the Orientation and Mobility Fitness Pyramid Prince & McAllister (2017) recommends a concentration of activities that focus on static balance along with flexibility activities that can be performed in facilitated and unfacilitated movements. An example of a static pose is ones posture. Individuals with visual impairments should practice standing against the wall and on different surfaces. The recommendation to include in Tier 3 is active and passive stretching. These stretches are used in Yoga activities (Sobry, Badin, Cernaianu, Agnani, & Toussaint, 2014; Wiszomirska, Kaczmarczyk, Blazkiewiez, & Witt, 2015). The Orientation Mobility Fitness Pyramid Prince & McAllister (2017) suggests in Tier 3 flexibility and balance activities should be incorporated two or three times a week along with their daily traveling

skills. Static stretches should be held a minimum of 15 to 30 seconds and incorporated two to three time a week (Sobry, Badin, Cernaianu, Agnani, & Toussaint, 2014; Wiszomirska, Kaczmarczyk, Blazkiewiez, & Witt, 2015).

Tier 4 in the Orientation Mobility Fitness Pyramid Prince & McAllister (2017) recommends participating in muscular endurance and strength activities twice a week for 15 to 60 minutes (appedndix). Winnick and Porretta (2017) define muscular endurance as the ability to hold weights while doing a certain movement pattern over an extended amount of time. Muscular strength is adding as much resistance as one can hold. Throwing a ball, karate kicks, and push-ups are examples of muscular endurance activities that can be practiced with facilitated and unfacilitated support in Tier 4. Tier 4 of the pyramid includes the emphasis on developing muscular strength & endurance. Lightweights and stretch bands can achieve the added resistance to improve muscular endurance and strength with proper supervision (Griffin-Shirley & Bozeman, 2016; Haegele & Lieberman, 2017; NCPAD, 2017). These activities are recommended for visually impaired adults to include in their personal fitness routines two days a week for 15 to 60 minutes (Griffin-Shirley & Bozeman, 2016; Haegle & Lieberman, 2017; Winnick & Porretta, 2017).

The concept of fitness is important across all population, no matter what the disability may be. In our everyday lives, we engage in a variety of physical activity whether it is mowing the lawn, doing housework, or getting dressed for the day (Sobry, Badin, Cernaianu, Agnani, & Toussaint, 2014; Winnick & Porretta, 2017).

The Orientation Mobility Fitness Pyramid Prince & McAllister (2017) illustrates that there is a need for more educational tools to eliminate inactivity as one of the top risk factors in maintaining health (WHO, 2010). This customized orientation and mobility fitness pyramid recommends basic guidelines to improve personal fitness and orientation mobility skills of individuals with visual impairments (Griffin-Shirley & Bozeman, 2016; Haegele & Lieberman, 2017; Winnick & Porretta, 2017). There is a need to compliment the Orientation Mobility Fitness Pyramid Prince & McAllister (2017) with a detailed curriculum map. The key points of this curriculum map will provide a collaborative blueprint for adults with a visual impairments to implement the recommended orientation mobility skills with the integrated fitness concepts.

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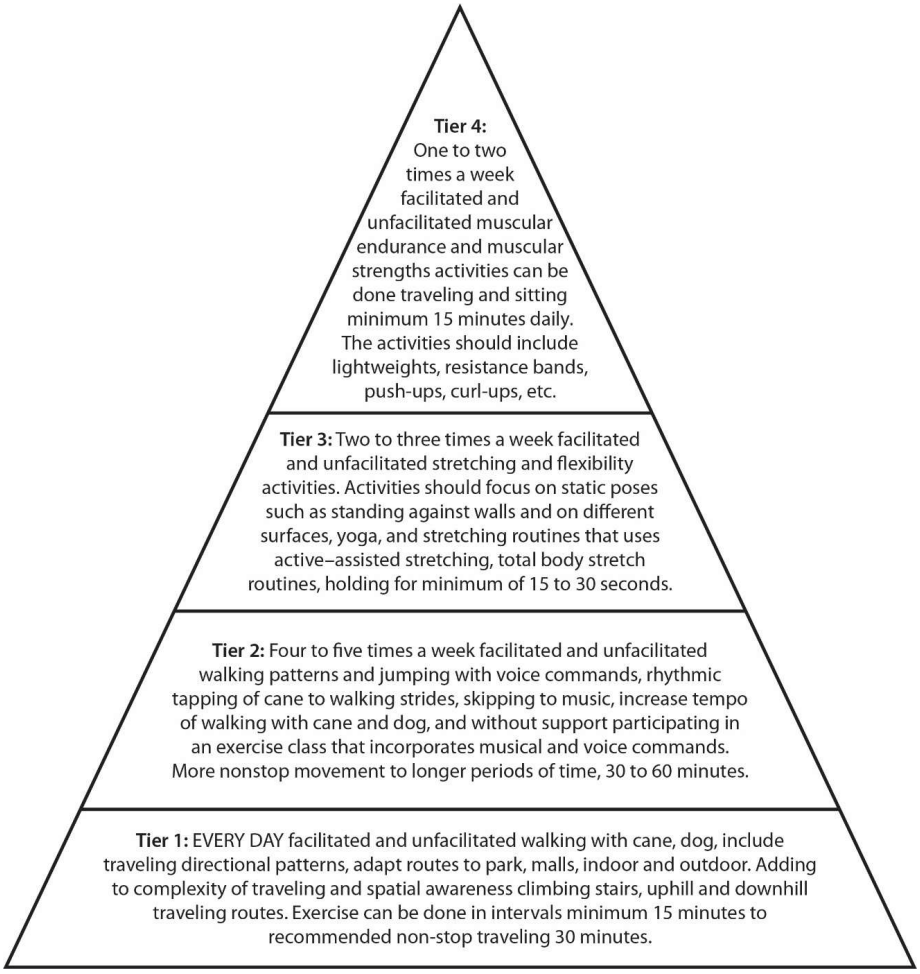
APPENDIX

Orientation Mobility Fitness Pyramid Prince & McAlister (2017)



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