

Proceedings of the International Seminar of Physical Education, Leisure and Health, 17-19 June 2019. Castelo Branco, Portugal

Cite this article as:

Proceedings of the International Seminar of Physical Education, Leisure and Health; Castelo Branco, Portugal. (2019). *Journal of Human Sport and Exercise*, 14(4proc), S1169-S1823.
doi:<https://doi.org/10.14198/jhse.2019.14.Proc4.82>

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Associations of physical activity with body composition and aerobic capacity in adults with Down syndrome


ANA RODRIGUES¹ , HÉLIO ANTUNES¹, RICARDO ALVES¹, DUARTE SOUSA¹, HELDER LOPES^{1,2}, JOÃO PRUDENTE^{1,2}

¹Department of Physical Education and Sport, Faculty of Social Sciences, University of Madeira, Portugal

²CIDESD, Portugal

ABSTRACT

The characterization of physical activity profile and the relation with health indicators is still an issue to explore in populations with Down Syndrome. With the development of this study we intend to: (i) describe the levels of physical activity, aerobic capacity and body composition of participants, considering gender and age, (ii) analyse the association between physical activity levels and aerobic capacity and body composition. In this study participated 26 subjects (16 males and 10 females) with Down syndrome, aged between 19 and 41 years (27.33 ± 11.93). All participants were evaluated in physical activity using a pedometer (one week), aerobic capacity (AAHPERD, 1998), weight and height. Reduced levels of physical activity (4073.71 ± 1217.69 steps/day) and aerobic capacity ($3.09 \pm .90$ minutes) were observed among participants. The prevalence of obesity was 36.4% and 13.6% overweight, 50% of the participants presented the recommended weight. However, none of the analysed parameters shows differences between sexes ($p > .05$), nor association between age and the indicators evaluated ($p > .05$). Physical activity has been shown to be associated with: (i) body mass index ($r = -.747$, $p < .001$) and (ii) with cardiorespiratory capacity ($r = .458$, $p = .019$). It is necessary to develop programs and policies to promote physical activity in this population, in order to prevent the development of various pathologies. **Keywords:** Down syndrome; Physical activity; Aerobic capacity; Adults.

 **Corresponding author.** Department of Physical Education and Sport, Faculty of Social Sciences, University of Madeira. Campus da Penteada, 9020-105 Funchal, Portugal.

E-mail: anajar@staff.uma.pt

Supplementary Issue: Spring Conferences of Sports Science. International Seminar of Physical Education, Leisure and Health, 17-19 June 2019. Castelo Branco, Portugal.

JOURNAL OF HUMAN SPORT & EXERCISE ISSN 1988-5202

© Faculty of Education. University of Alicante.

doi:10.14198/jhse.2019.14.Proc4.82

INTRODUCTION

The promotion of physical activity has been one of the main concerns of several health care organizations, as a strategy to prevent the development of several pathologies. The relationship between physical activity and various health indicators is widely reported in the literature (Bouchard, Blair, & Haskell, 2018). However, the studies that analyse the beneficial effects of physical activity on health in people with Down syndrome are still limited (Mendonca, Pereira, & Fernhall, 2010). In this context, with the development of this work we intend to: (i) describe the levels of physical activity, aerobic capacity and body composition of participants, considering gender and age; (ii) To analyse the association between physical activity levels with aerobic capacity and body composition.

MATERIAL AND METHODS

Participants

In this study participated 26 subjects (16 males and 10 females) with Down syndrome, aged between 19 and 41 years (27.33 ± 11.93). All participants have Physical Education classes, 2 to 3 session 60 minutes per session (total 120 to 180 minutes/week).

Measures

All participants were assessed in Physical Activity using a pedometer (Yamax Digiwalkers SW-700), worn for seven days. All participants were also evaluated for weight, height, body mass index and aerobic capacity (AAHPERD, 1998).

Procedures

Participants were invited to this study, through informed consent signed by the tutor. After the informed consent was collected, all participants were evaluated in body composition and aerobic capacity. The application and supervision of the pedometer use were carried out by the research team in collaboration with teachers and tutors.

Analysis

Descriptive statistics (mean and standard deviation) were used to characterize the sample in the variables under study. The gender difference in the variables under study where tested using the Mann-Whitney test. Spearman correlations were used to study the relationship between age and study variables and between physical activity, aerobic capacity and body composition. The statistical software used was SPSS version 25.0 and the level of significance was 5%.

RESULTS

Table 1. Characterization of the sample in the study variables: analysis by sex

	Total	Men	Females	p
Height (cm)	155.04±13.06	159.56±12.87	147.80±10.14	0.020
Weight (kg)	64.18±14.26	65.85±14.56	61.78±14.32	0.647
BMI (kg/m ²)	28.04±15.38	26.92±4.79	29.67±6.06	0.262
Aerobic capacity (min)	3.09±0.90	3.15±0.88	2.98±0.96	0.660
Physical Activity (steps. Day)	4073.71±1217.69	4458.05±1320.95	3458.76±728.49	0.053

On average each participant performs 4073.71 ± 1217.69 steps/day. The prevalence of obesity was 36.4% and 13.6% overweight, 50% of the participants presented the recommended weight. In aerobic fitness on average the participants perform the test in $3.09 \pm .90$ minutes. However, none of the analysed parameters shows differences between sexes ($p > .05$), nor association between age and the indicators evaluated ($p > .05$).

Physical activity has been shown to be associated with: (i) body mass index ($r = -.747$, $p < .001$); (ii) with cardiorespiratory capacity ($r = .458$, $p = .019$).

DISCUSSION

It is observed that the participants present reduced levels of physical activity, aerobic fitness and high prevalence of overweight and obesity. Similar results are reported in other studies regarding physical activity (Shields, Plant, Warren, Wollersheim, & Peiris, 2018), aerobic fitness (Pitetti, Climstein, Campbell, Barrett, & Jackson, 1992) and overweight (Stancliffe et al., 2011). In fact, the literature reports the reduced levels of physical activity among adults with Down syndrome, since only one in three adults with intellectual disabilities were sufficiently active to achieve health benefits (Temple, Frey, & Stanish, 2006).

Reduced levels of physical activity are worrying, considering that they represent an increased risk for the development of several pathologies (Bouchard et al., 2018), since that people with Down syndrome have an increased risk of developing them (Sobey, Judkins, C. P. Sundararajan, Phan, Drummond, & Srikanth, 2015). Our research confirms this aspect when we verify the association between physical activity levels, aerobic capacity and body composition, and reduced levels of physical activity are associated with reduced levels of aerobic capacity and high body mass index. The development of studies that deepen physical activity characteristics such as intensity should also be the target of future investigations.

CONCLUSIONS

Levels of physical activity and aerobic capacity were found to be low among people with Down syndrome. In this context, it is necessary to develop programs and policies to promote physical activity in this population, namely by the relationship with other health indicators such as aerobic capacity and body composition.

REFERENCES

- Bouchard, C., Blair, S. N., & Haskell, W. (2018). *Physical Activity and Health* (2th Eds). Champaign: Human Kinetics.
- Mendonca, G., Pereira, F., & Fernhall, B. (2010). Reduced exercise capacity in persons with Down syndrome: Cause, effect, and management. *Therapeutics and Clinical Risk Management*, 6, 601–610. <https://doi.org/10.2147/tcrm.s10235>
- Pitetti, K. H., Climstein, M., Campbell, K. D., Barrett, P. J., & Jackson, J. A. (1992). The cardiovascular capacities of adults with Down syndrome: a comparative study. *Medicine & Science in Sports & Exercise*, 24(1), 13–19. <https://doi.org/10.1249/00005768-199201000-00004>
- Shields, N., Plant, S., Warren, C., Wollersheim, D., & Peiris, C. (2018). Do adults with Down syndrome do the same amount of physical activity as adults without disability? A proof of principle study. *Journal of Applied Research in Intellectual Disabilities: JARID*, 31(3), 459–465. <https://doi.org/10.1111/jar.12416>

- Sobey, C. G., Judkins, C. P., Sundararajan, V., Phan, T. G., Drummond, G. R., & Srikanth, V. K. (2015). Risk of Major Cardiovascular Events in People with Down Syndrome. *PLoS One*, 10, E0137093. <https://doi.org/10.1371/journal.pone.0137093>
- Stancliffe, R. J., Lakin, K. C., Larson, S., Engler, J., Bershady, J., Taub, S., ... Ticha, R. (2011). Overweight and Obesity Among Adults With Intellectual Disabilities Who Use Intellectual Disability/Developmental Disability Services in 20 U.S. States. *American Journal on Intellectual and Developmental Disabilities*, 116(6), 401–418. <https://doi.org/10.1352/1944-7558-116.6.401>
- Temple, V. A., Frey, G. C., & Stanish, H. I. (2006). Physical Activity of Adults with Mental Retardation: Review and Research Needs. *American Journal of Health Promotion*, 21(1), 2–12. <https://doi.org/10.4278/0890-1171-21.1.2>

