

Low Bone Mineral Density Among Persons with Intellectual Disabilities at the 2003 Special Olympics World Summer Games



Special Olympics

Healthy Athletes
Health Promotion

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Abstract

Osteopenia and osteoporosis appear to be more frequent among people with disabilities, especially Down syndrome (DS)¹⁻³. To validate and better estimate the prevalence of this finding, we measured the calcaneal bone mineral densities (BMD), using PIXI® technology, of athletes participating in the 2003 Special Olympics World Summer Games in Dublin, Ireland.

The results showed that **111 (17.6%)** had at least one BMD with a T-score in the range of -1.0 to -2.49; **17 (2.6%)** individuals had at least one BMD with a T-score of less than or equal to -2.5. Therefore **128 (20.2%)** met the usual criteria for osteopenia or osteoporosis. T-scores, however, compare the BMD of subjects with the BMD expected of 30 year-old adults. Most of the athletes studied were younger and normal ranges for bone density have not been established among adolescents. Our data tend to confirm a high prevalence of low BMD among people with intellectual disabilities, even when they are engaged in athletic activities. Future work is needed to assess bone health among adolescents and young adults with intellectual disabilities.

Methods

Since 1991, Special Olympics athletes attending World Games have been offered free health screenings (Special Olympics Healthy Athletes program). During the 2003 Games in Ireland, calcaneal BMD testing was offered, using PIXI technology. Baseline demographic data on the athletes were later extracted from the registration and medical forms, obtained from the Games Organizing Committee.

Results

Of about 3,500 athletes who entered the Healthy Athletes venue, 653 underwent PIXI scanning. Demographic data are presented in Table 1.

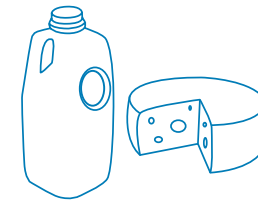
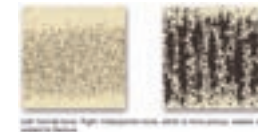
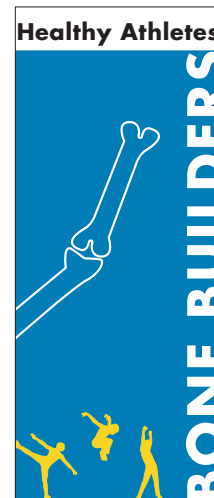
	Total	Percent
Male	803	62.10%
Female	490	37.90%
Mean Age	24.7	
Ethnicity		
• Caucasian	986	76.26%
• African	207	16.01%
• Asian	55	4.25%
• Hispanic	45	3.48%

A total of **1,294** scans were performed among **653** individuals. Most (629) had both heels measured. Among these athletes, 17 (2.6%) had a reading that met WHO criteria for osteoporosis and 111 (17.6%) for osteopenia. Unfortunately, data on presence or absence of DS was most often not available. The relationship between DS and low BMD could not be more directly assessed.



Conclusions

- BMD screening in this population of adolescents and young adults with ID was feasible; Healthy Athletes venues provide excellent opportunities to investigate bone health in both genders, across diverse age and racial groups.
- A significant percent of Special Olympics athletes had low BMDs, even though they participate in sports.
- Lack of normative data, however, makes interpretation of BMD readings difficult.



Future Directions

- Special Olympics athlete medical histories will include presence of etiologies associated with ID, specifically Down syndrome.
- Further surveys of BMD need to be taken among people with ID with multivariate analyses to see if DS is an independent risk factor for low BMD.
- The best methods to convey bone health information to people with ID need to be understood.
- Alternative means of measurement and interpretation of BMD findings according to age and presence of ID should be explored.



References

1. Angelopoulos N et al. European Radiology. 9(4): 648-51
2. Tyler CV et al. Mental Retardation. 38(4): 16-21

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