

## **Ages and Balance Ability**

**BISWAJIT BHUNIA**

Assistant Professor

Government College of Physical Education for Women

P.O.-Dinhata, Dist.-Coochbehar (W.B.) India

### **ABSTRACT**

Balance is considered as an important coordinative component of physical fitness. Experts have identified two types of balance – static and dynamic. The purpose of this study was to analyze the variation of balance ability of normal healthy persons with respect to age. The study was delimited to the male populations only. Thirty subjects were randomly selected from each of the eight age groups- 6 years, 10 years, 20 years, 30 years, 50 years, 60 years and 70 years. Static Balance was measured by Stork Stand Test and Dynamic Balance was measured by Bass Dynamic Balance Test. Result showed that both the static and Dynamic Balance increased with increase of age and become highest for the 20+ age. There after the balance ability showed gradual diminishing trend and after forty years the decrease was rapid.

**Key Words :** Static balance, Dynamic balance

### **INTRODUCTION**

Balance is considered to be an important physical fitness component. Balance ability influences maintenance of posture in both static and dynamic conditions. In day today living human beings depend on balance ability during their normal movement activities. Lack of balance creates problem and sometime causes injury due to imbalance conditions. In Physical Education and Sports balance ability has been duly emphasized during executing motor skill and sports techniques. Almost all games and sports involved balance ability directly or indirectly. Some among them depend more on this ability such as gymnastics and yogic activities. Mechanically balance has been defined as a state of rest. The basic conditions that should be fulfilled are- The result of sum of all vector forces acting on the body should be zero. The result of sum of all moments of force acting on the body must be zero. In reality the experts have emphasized on the concept of dynamic balance also. There are many factors that influence the balance ability of a person among them chronological age is very important. The

general trend indicated by research finding is balance ability decreases with increase of age. 1. (Colledge *et al.*, 1994; Du Pasquier *et al.*, 2003; Ekdahl *et al.*, 1989; Era and Heikkinen, 1985; Gill *et al.*, 2001; Matherson *et al.*, 1999; Pohonen, 2001; Rgind *et al.*, Straube *et al.*, 1988). In longitudinal studies, findings have indicated that the balance deterioration in people over 75 years of age has been shown to be more pronounced. 2. (Baloh *et al.*, 1998; Du Pasquier *et al.*, 2003; Era *et al.*, 2002).

### **Aim and objectives:**

In the present study attempt has been made to analyze the specific changes in balance ability that take place in different ages.

### **METHODOLOGY**

30 subjects for each of the eight age groups 6, 10, 20, 30, 40, 50, 60 and 70 years were randomly selected for this study. Static Balance was measured by Stock Stand Test and Dynamic Balance was measured by Bass Dynamic Balance Test.

## RESULTS AND DISCUSSION

The Mean and Standard Deviation of Balance Ability of different age groups have been shown in Table 1.

It is seen from the table that the balance increased from age 6 to 20 years and there after the value was gradual decreasing and after the age of 60 years the value became alarmingly low.

To test the inter group variation it was seen that the balance ability increased significantly between 10 to 20 years. It is also seen that the balance ability decreased significantly from 20 to 30 years and 30 to 40 years. The increase from 6 to 10 years was not statistically significant similarly the decrease from 40 to 50 years, 50 to 60 years and 60 to 70 years were not statistically significant.

Similarly the inter group variation in dynamic balance

has been tested and the results have been presented in Table 3.

It is seen that the difference in dynamic balance between 10 to 20 years was statistically significant. The decrease in dynamic balance between 30 to 40 years and 40 to 50 years and 60 to 70 years were statistically significant. In other cases the differences were not statistically significant.

On the basis of the result the following conclusions were drawn

1. The static and dynamic both balances became highest in magnitude for the age group of 20+ years.
2. The improvement in static and dynamic balance up to 10 years is slow. But from 10 to 20 years, it is rapid.

**Table 1 : Mean and Standard Deviation of balance ability of different age groups of subjects**

Groups (in years)	Mean	
	Static Balance(in seconds)	Dynamic Balance(in points)
6.00	12.53 ± 14.57	41.23 ± 11.14
10.00	13.23 ± 9.03	48.50 ± 18.54
20.00	35.03 ± 26.04	63.40 ± 18.20
30.00	23.03 ± 24.49	61.67 ± 17.60
40.00	11.17 ± 10.95	47.23 ± 19.30
50.00	10.77 ± 13.66	25.50 ± 10.75
60.00	3.47 ± 3.92	19.70 ± 13.80
70.00	1.13 ± .57	3.07 ± 2.18

**Table 2 : Significance of inter group variation in Static Balance**

Groups	Difference between Mean	Std. Error	Significant level
6 vs 10	-0.70	3.8	.855
10 vs 20	-21.80	3.8	.00
20 vs 30	12.00	3.8	.002
30 vs 40	11.86	3.8	.002
40 vs 50	.40	3.8	0.92
50 vs 60	7.3	3.8	0.057
60 vs 70	2.33	3.8	.542

**Table 3 : Significance of inter group variation in Dynamic Balance**

Groups	Difference between Mean	Std. Error	Significant level
6 vs 10	-7.26	3.94	.06
10 vs 20	-14.90	3.94	.00
20 vs 30	1.73	3.94	.66
30 vs 40	14.43	3.94	.00
40 vs 50	21.73	3.94	.00
50 vs 60	5.8	3.94	.14
60 vs 70	16.63	3.94	.00

After 60 years of age the balance ability decreases rapidly.

## REFERENCES

- Baloh, R.W., Corona, S., Jacobson, K.M. Enrietto, J.A. and Bell, T. (1998). A prospective study of posturography in normal older people. *J. American Geriatrics Society*, **446** : 438-443.
- Berg, K. (1989). Balance and its measure in the elderly: a review. *Physiotherapy Canada*, **441** : 240-246.
- Binder, E., Schechtman, K., Ehsani, A., Steger-May, K., Brown, M., Sinacore, D., Yarasheski, K., and Holloszy, J. (2002). Effects of exercise training on frailty in community-dwelling older adults : results of a randomized, controlled trial. *J. American Geriatric Society*, **50** : 1921-1928.
- Bressel, E., Yonker, J.C. and Kras, J. (2007). Comparison of static and dynamic balance in female collegiate soccer, basketball and gymnastics athletes. *J. Athletic Training*, **42(1)** : 42-46.
- Buchner, D., Cress, M., De Lateur, B., Esselman, P., Margherita, A., Price, R. and Wagner, E. (1997). The effect of strength and endurance training on gait, balance, fall risk, and health services use in community-living older adults. *J. Gerontology Series A*, **52** : M218-224.
- Colledge, N.R., Cantley, P., Peaston, I., Brash, H., Lewis S. and Wilson J.A. (1994). Aging and balance : the measurement of spontaneous sway by posturography. *Gerontology*, **40** : 273-278.
- Diener, H.C., Dichgans, J., Guschlbauer, B. and Bacher, M. (1986). Role of visual and static vestibular influences on dynamic posture control. *Human Neurobiology*, **55** : 105-113.
- Du Pasquier, R.A., Blanc, Y., Sinnreich, M., Landis, T., Burkhard, P. and Vingerhoets, F.J. (2003). The effect of aging on postural stability: a cross sectional and longitudinal study. *Clinical Neurophysiology*, **333**: 213-218.

\*\*\*\*\*