

Normative value of timed up and go test in children between the age group of 5-12 years

*Victoria David Kuttan, **Dr. Suvarna Shyam Ganvir

*BPTH Intern, **Head of the department, Physiotherapy in Neurosciences,

Corresponding Author : Dr. Suvarna Shyam Ganvir

Mail id : victoriakuttan66@gmail.com

Mobile No.: 8452881656

Address : Physiotherapy in Neurosciences, DVVPF'S College of Physiotherapy, Ahmednagar, Maharashtra, India.

Abstract :

Background : Though Timed up And Go test is commonly used for research studies in Paediatric age group, the normative values in the particular age group of 5-12 years in Indian children is not available. **Aim :** To determine normative values for timed up and go (TUG) test in children. **Methods and Material:** In this observational study participants Age , Sex , height , weight were recorded. Test was first demonstrated to be performed that the child got up from a chair walk a 3 meter walkway turn and then walk and sit in the chair. The test was performed thrice and the time was recorded. **Statistical analysis used:** Descriptive and inferential Statistics. **Results:** The children took 5.89 seconds to complete the test (male =5.89 seconds and female = 6 seconds) . There was no significant correlation between BMI and mean TUG score. **Conclusions:** This study provides the normative values of Timed up and Go test in children which can be used for future research studies. **Key-words:** Children ,functional mobility ,Timed up and go test .

Introduction : There is major need to assess the functional mobility in Paediatric population so as to consider them as functionally mobile in relation with age , sex , and other anthropometric measurement which affects the

functional mobility of an individual. Functional assessment is concerned with the child's performance in relation to the physical and social demands, and most of the test and measures available uses specific daily activities.¹ Functional mobility is that which determines the child's ability to play, learn and participate in various task of daily living.^{2, 3} TUG test was first developed to evaluate alterations of functional mobility in elderly individuals while performing tasks that have the potential to cause falls. The original test measures the time an individual needs to rise from a standard armchair, walk a distance of 3m, turn, walk back to the chair, and sit down again.^{3,4,5} TUG is a simple, easy and less time consuming test which can be used at different stages of rehabilitation as tool for prognosis of patient population with functional mobility difficulty. The TUG test has been used for assessing functional mobility in children⁴ and adolescents with varied diagnoses such as cerebral palsy, brain trauma, myelomeningocele, leukaemia, sarcoma, cystic fibrosis, down syndrome and other diseases, who are undergoing rehabilitation^{6,7,8}. The test has many of the mobility tasks specified by the International Classification of Functioning, Disability and Health (ICF), which are performed in our day today life by the individual, such as changing the basic position of the body, maintaining the position of the body, self-transfer of position, walking, and moving^{9,10}.

There is no data available of TUG in normal developing Indian Paediatric population. This study was taken up with a primary objective of establishing the normative values of TUG in children between 5 to 12 years of age.

Subjects and Methods : This was an observational study carried out in Ahmednagar district. All the parents, the legal guardian signed informed consent before the test was performed.

Normal developing children in the age group 5 to 12 years were selected from 4 different

school of Ahmednagar from February 2016 to April 2016. The subjects were claimed physically fit by the monthly medical and physical health check up done in their school. Children who had fracture or who had undergone surgery in the previous in last one year, who had cardio-respiratory, neuromuscular, intellectual disability or who did not perform the test correctly were excluded from the study.

Through convenient sampling 100 children, 50 male and 50 females in the age group of 5 to 12 year were included in the study.

Table 1: Showing mean age wise TUG score in seconds

Age (years)	Male (seconds)	Female (seconds)	Both (seconds)
5	6.18	5.83	6
6	6.7	5.89	6.22
7	5.03	5.20	5.11
8	5.48	6.97	5.81
9	5.74	5.48	5.62
10	6.07	6.44	6.18
11	6.18	6.03	6.11
12	6.077	6.203	6.14
From 5 To 12	5.93	6	5.89

Table 2 : Showing Correlation Between TUG And BMI in males, females.

Gender	Co-rrrelation co - efficient	95% confidence interval	Co-efficient determinant	Two tailed p value	Signifi c-ance (S/NS)
Male	-0.3256	-0.5538 to - 0.05191	0.1060	0.0210	S
Female	-0.06732	-0.3394 to -0.2151	0.004532	0.6423	NS

Table 3 : Showing Correlation Between TUG And BMI in the age group of 5 to 12 years

Age (Years)	Correlation co -efficient	95% confidence interval	Co-efficient determinant	Two tailed p value	Signific -ance
5 years	-0.2890	-0.8256 to 5.221	0.08353	0.4875	NS
6 years	-0.2096	-0.6390 to 0.3194	0.04394	0.4359	NS
7 years	0.5335	0.02903 to 0.8213	0.2846	0.0406	S
8 years	-0.8249	-0.9673 to 0.2871	0.6805	0.0117	S
9 years	0.04990	-0.6788 to 0.7290	0.002490	0.9066	NS
10 years	0.1310	-0.4528 to 0.6362	0.01716	0.6697	NS
11 years	-0.2549	-0.7231 to 0.3738	0.06499	0.4239	NS
12 years	-0.2597	-0.6481 to 0.2359	0.06744	0.2980	NS
All samples	-0.2114	-0.3916 to 0.01561	0.04470	0.0347	NS

(NS – non significant , S - significant)

Discussion : It was found that that there was a slight difference in the time taken by the male children as compared to female children where females took more time, this can be because of the large. Variation in the timing and tempo of maturation in boys and girls. Regardless of early or late maturation, the sequence of maturity events is closely adhered. Biological age can be assessed by various methods including sexual, morphological, dental, and skeletal criteria. Although no single system of biological maturation provides a complete description of the maturation of an individual and due to hormonal changes in which makes them to produce less energy for physical activity in comparison with males.¹¹

Also in different region it was found varying, this can be due to the different culture practiced, ethnicity⁵. From the previous studies available in Australian children the mean values were 5.9 second in age group 3 to 9 years , in Brazilian children of age group 3 to 18 years the mean values were 5.6 second, in Pakistani children of age group 8-14 years the mean values were 5.2 sec.^{10,5,9}

In the age group of 5 and 6 years the mean TUG score were less as compared to that in

the age group of 7, 8 and 9 years. This can be due the fact that balance increases as the age increases thus, reducing the time taken to complete the test. Whereas in the age group of 10, 11 and 12 years there was a rise in the mean TUG score. This can be due to female participants in this age group was more as compared to males. And this is due to lower levels of perceived competence, enjoyment of physical activities and perceived importance of sports or physical activity in females may be key mediators of this gender difference¹².

There was no correlation between BMI and mean value of TUG. This is probably because the children were in the acceptable levels of BMI. Also the age group studied was below 12 yrs of age which has not reached the adolescent age.

And where the time taken to complete the test was more in children with increased BMI its due to Excessive amount of adipose tissue increases energy output due to increased body inertia making locomotion of obese less efficient¹³. For an obese individual, the difficulties associated with increasing age, along with the lack of regular physical activity, are capable of making the gait dysfunctions even more severe¹⁴.

Conflict of interest : none

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