FULLERTON FUNCTIONAL FITNESS TEST IN ADULTS AGED 50 TO 70 YEARS: A RELIABILITY AND VALIDITY STUDY

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Abstract -
Aging is a process of various changes precipitated overtime which increases the risk of diseases and death. The diversity of changes simultaneously follows the age advancement. Since the Fullerton functional fitness test has been developed and performed in different countries, this is to assess a Reliability and Validity of Fullerton Functional Fitness test in the community dwelling elderly aged between 50-70 years of the Indian population. These include information of the study design, the source, the subjects, instrumentation, procedure of assessment and methods used in data collection. Study design - Reliability and Validity of Battery Test Sample: Adults age between 50 -70 years, Sample source: community dwelling elderly, Sample size: 80. The Fullerton test encompasses six items for assessment of Aerobic endurance, Upper body strength, Lower body strength, Motor Coordination and Balance. Before the commencement of the test, the subject will be instructed to perform the tasks accurately. Proper positioning of the devices should be ensured for safety purposes. A five- to ten-minute warm-up exercises along with general stretching exercises will be performed before the tests commences. Before beginning and after the tests are finished, heart rate and arterial blood pressure will be measured. The first test will be forearm flexion - arm curl followed by the back scratch, rising from chair, chair sit and reach, the 8 feet trial and 2 min step-in-place. Informed Consent taken 1.DAY 1 - FFT + TIME UP AND GO (TUG) + BRIEF BEST 2.DAY 2 - FFT + 6 MIN WALK TEST (ATS guidelines 2002) 3.DAY 3 - FFT and then final scores are taken scores of FFT. The protocol of day 1,2, and 3 will be used for reliability and scores of FFT, TUG, Brief best, 6MWT will be used for validity. A total number of 76 subjects were assessed for the study. According to inclusion and exclusion criteria, the subjects aged 50-70 year have been enrolled in the study, out of which 26 were female subjects and 50 were male subjects. The age group of 50 - 60 years of 27 male and 18 female with mean age 55.66 ± 3.44 and 55.00 ± 3.12 and another group of age 61-70 years of 23 male and 7 female with mean age 67.30 ± 3.52 and 67.42 ± 3.50.The age group of 50 - 60 years of 27 male and 18 female with mean BMI 24.91 ± 3.19 and 26.38 ± 3.40 and another group of age 61-70 years of 23 male and 7 female with mean BMI 25.38 ± 3.25 and 25.42 ± 1.69. In summary, although the relative reliability for all the test items are acceptable. The result shows a significant correlation. This tool is highly reliable and valid in the Indian population.

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INTRODUCTION

Aging is a process of various changes precipitated overtime which increases the risk of diseases and death. The diversity of changes simultaneously follows the age advancement. The process of aging requires considerable attention. According to geriatric research studies, aging results from the accumulation of various changes such as molecular and cellular damage over time. This leads to a gradual decrease in physical and mental capacity, a growing risk of disease and ultimately death. The diversity seen in older age is not random. Apart from this, aging is associated with life transitional events.[1]

Process of aging includes a decrease in the physiological capacity, organ functions, body composition, muscle mass as well as bone mineral density and increase in the body fat mass content. These effects result in an imbalance and becoming more prone to fall resulting in decreased physical function contributing to disability.[2]

Aging leads to reduced efficiency of several functions such as postural control and gait and their treatment can affect the system that regulates balance and posture. Impairment of balance results in increased risk for falls and often decreased physical activity curtailing postural stability and quality of life.[3]

The shift in livelihood becomes the basis for the definition of old age which happens between the ages of 45 and 55 years for women and between the ages of 55 and 75 years for men.[4]

Aging eventually targets all the systems of the body because diversity of changes happens in every cell of whole organs. These change the function and appearance of an organ. Aging leads to decline in functional capacity because of loss of cardiovascular, respiratory, neuromuscular and metabolic functions.[5]

Aging alternates the body composition index. It increases the body fat percentage and decreases lean body mass. Skeletal muscle has about 60% of body's potassium and the ratio of nitrogen is higher in muscle than in non-muscle lean tissue. With advancing age, the skeletal muscle protein is reduced and non-muscle protein is maintained. Cohn and co-worker (1980) also demonstrated that the loss in the body nitrogen is related to subsequent loss of calcium which suggests that the loss of skeletal muscle may be related to the reduced bone density seen in the elderly. Furthermore, computed tomography of each muscle shows increased intramuscular fat decrease in cross-sectional area of thigh along with decreased muscle density after the age of 30 years.[5]

In clinical geriatrics and research, the imperative problem is evaluation of physical functions. In recent years, different batteries of physical performance for elderly populations have been formed. They encompass different tests ranging from basic motor abilities to everyday activities which depend on the relevant field of the domain of physical function.[6]

For clinical geriatrics and aging research, Physical functioning batteries provide knowledge on selection, administration, and interpretation of these assessment tools. These are the different types of batteries: American Alliance for Health, Physical Education, Recreation and Dance (AAHPERD), Short physical performance battery (SPPB), Mac Arthur battery, Functional Fitness Battery, Fullerton Functional Fitness Test.

Fullerton fitness test (FFT) evaluates physical abilities such as functional independence and body mass index. The FFT is relatively easy and safe to perform and there are "normative scores" for each exercise enabling it as a useful battery to evaluate functional fitness. Apart from this, it can be organized as a circuit to assess up to 24 people in 90 min of duration. Before commencement of the final test, one or two trial sessions should be taken before the final session. At last, the caution must be taken while assessing this scores even though FFT is designed for the independent elderly people.[6]

METHODOLOGY

The methods used for the study are described here. These include information of the study design, the source, the subjects, instrumentation, procedure of assessment and methods used in data collection.

Study design - Reliability and Validity of Battery Test

Sample: Adults age between 50 -70 years

Sample source: community dwelling elderly

Sample size: 80

Inclusion criteria: Elderly people, community dwelling elderly. Age is between 50 - 70 years. Community dwelling older adults who are not hospitalized or institutionalized. Those who are ambushed without assistive devices (e.g. cane, walker, crutches).[7]Person should walk at least 150 minutes in a day.

Exclusion criteria History of myocardial disease, CABG, or other cardiac surgery within the

previous six months.[8] History of neurological disease. (Example- stroke, Parkinson's) with residual impairment.[8] Severely limiting arthritis, joint instability, back pain.[8] History of fracture within the previous six months.[8] Total joint replacements with in previous six months.[8] Abdominal surgeries previous six month.[8] Documented dementia or depression.[8] Surgery, chemotherapy, radiation therapy for cancer within the previous six month.[8] Acute illness or injury on the day of assessment.[8] Uncontrolled arterial blood pressure exceeding 160/100 mmhg.[8]

Procedure:
The Fullerton Functional Fitness Test: The Fullerton test comprises six tests for the assessment of upper body strength, lower body strength, aerobic endurance, motor coordination and balance.

Prior to the first test, the subject will be instructed to perform the tasks as a trial. Appropriate caution should be taken by proper positioning of the devices. Prior to the tests, a five- to ten-minute warm-up will be conducted along with stretching exercises. Pre-test and post-test data for arterial blood pressure and heart rate will be measured.

FFT starts with the forearm flexion- arm curl followed by the back scratch, rising from the chair, the chair sit and reach, the 8 feet trial and 2 min step-in-place.

The Balance Evaluation System Test (BESTest):
The BESTest includes 6 items: Biomechanical constraint, Stability limits/ verticality, Anticipatory postural adjustment[24] Postural responses[24] Sensory orientation[24] Stability in gait[9]

Termination criteria: Excessive rise in B.P. systolic pressure > 180 mm Hg or diastolic pressure > 90 mm Hg. Patient in failure. Shortness of breath quantifies by sudden increase in respiratory rate. Fatigue, wheezing, leg cramps or claudication. Sign of poor perfusion (Lightheadedness, confusion, nausea, cyanosis, pallor or cold & clammy skin). Presence of nervous system syndrome (example dizziness, syncope). Subjects desire to stop. Complaint of chest pain.[10]

OUTCOME MEASURE -Balance Measure –
The Brief-BESTest was created from 6 items of the BESTest, 1 from each section, with 2 items (single-leg stance and functional forward reach) being scored bilaterally, resulting in an 8-item test. Items of hip abductor strength, functional reach, one-leg stance, lateral push-and-release, standing on foam with eyes closed, and the Time Up & Go' test

defined the Brief-BESTest. Test score ranges from 0 to 3 for each test of FFT battery. Summation of score points is done to obtain the total score out of 24 points. Points towards higher edges conclude better performance. Brief-BESTest indicate reliability and superior sensitivity as compared to that of the Mini-BESTest and represent all theoretically based criterias of the original BEST est.[11]

Endurance measure-The six minute walk test is simple, valid, convenient test to assess the sub-maximal level of functional capacity, safe to perform & more representative of activity of daily living. The six minute walk test requires a 30 meter passage for walking. Subjects are instructed to rest 10 minutes prior to the commencement of the test. Pre-test data and post-test data after 5 minutes for variables such as age, height, weight, blood pressure, heart rate, respiratory rate, $Sp0_2$, dyspnea and fatigue is measured. Total distance walked in 6 minutes is compared with the predicted distance from the reference equation.[2]

Agility Measure - The Time Up and Go (TUG) test determines functional mobility. It targets specifically power, agility, and balance and includes transfer tasks (standing up and sitting down), walking, and turning. Cut-off times for TUG performance for older individuals indicates higher risk of falling, poor muscle strength and sedentary lifestyle. It demonstrates impairments related to basic activities of daily living (ADLs). That makes TUG a strong predictor of falls.

RESULTS
A total number of 76 subjects were assessed for the study. The age between 50-70 year old subjects has been enrolled in the study according to inclusion and exclusion criterias, of which 26 were female subjects and 50 were male subjects. The age group of 50 - 60 years of 27 males and 18 females with mean age 55.66±3.44 and 55.00±3.12 and another group of age 61-70 years of 23 male and 7 female with mean age 67.30±3.52 and 67.42±3.50. The age group of 50 - 60 years of 27 male and 18 female with mean BMI 24.91±3.19 and 26.38±3.40 and another group of age ±61-70 years of 23 male and 7 female with mean BMI 25.38±3.25 and 25.42±1.69. (Table no.-1)

The age group is between 50-60 years of age, 18 females and 27 male. FFT1AVG 30 second chair stands to assess the lower limb strength and mean value and SD is 35.70±4.44, 37.48± 8.46. FFT2AVG the arm curl assesses the upper body strength and the mean value and SD

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18.80+1.869,19.81+2.56. FFT3AVG is a 6 minute walk test which assesses the lower limb strength and their mean value and SD 432.2+31.5, 462+40.50. FFT4AVG chair sit and reach test for assessment of the lower body flexibility and gait pattern and their mean value and SD 1.22+3.44 ,2.74+8.03. FFT5AVG is a back scratch test for checking the upper body flexibility, the mean value and SD is -.70+5.18, -2.79+ 5.33. The FFT6AVG 8 foot up and go test assesses the agility and dynamic balance and their mean value and SD are 9.75+.860 and 9.71+.658 respectively. BB total is berg balance scale which assesses the balance and strength of the upper body and lower body the mean value and SD is 23.27+1.12, 22.81+1.00. AVG distance is six minute walk test which assess the lower body strength and mean, SD value is 95.33+48.50, 83.40+11.5. the TUG is Time Up and Go test to assess the agility and dynamic balance the means and SD is 9.72+89 ,9.74+.655. (Table no. – 2a)

The age group is between 61-70 years of age of 7 females and 23 males. FFT1AVG 30 second chair stand to assess the lower limb strength and mean value and SD is 31.14+4.62, 36.2+ 5.40. FFT2AVG the arm curl assesses the upper body strength and the mean value and SD 15.90+1.31 ,18.5+2.12. FFT3AVG is a 6 minute walk test which assesses the lower limb strength and their mean value and SD 377.14+57.07, 442+38.6. FFT4AVG chair sit and reach test to assess the lower body flexibility and gait pattern and their mean value and SD .57+2.99, -.318+5.13. FFT5AVG is a back scratch test to assess the upper body flexibility, the mean value and SD is -5.14+6.89, -5.00+ 9.05. The FFT6AVG 8 foot up and go test assesses the agility and dynamic balance and their mean and SD 11.2+ 2.56 ,9.82+.491. BB total is berg balance scale which assesses the balance and strength of the upper body and lower body the mean value and SD is 19.85+1.77, 21.86+2.30. AVG distance is a six minute walk test which assesses the lower body strength and mean, SD value is 86.6+82.50 ,18.8+11.77. The TUG is a time up and go test which assesses the agility and dynamic balance of the means and SD is 11.28+2.56 ,9.82+.491. (Table no. – 2b)

TEST RETEST RELIABILITY OF FFT -
The test reliability of each component score of FFT was compared with the day one and day three. The Fullerton Functional Fitness Test(FFT) represents the six components; these are 30 second chair stands(FFT1A) to assess the lower limb strength and correlated significantly with FFT1C day three.

(r =0.970). The arm curl FFT2A asses the upper body strength correlated significantly with FFT2C day three.(r =0.094). The 6 minute walk test (FFT3A) assesses lower body strength and aerobic fitness and significantly correlates with FFT3C.(r=0.094). Chair sit and reach test(FFT4A) assesses the lower body flexibility and gait patterns significantly correlated with day three (FFT4A) and shows the results (r=0.990). Back scratch test (FFT5A) assesses the upper body flexibility are significantly correlated with day three (FFT5C) shows results (r=0.001). The 8 foot up and go test (FFT6A) assesses the agility and dynamic balance significantly correlated with FFT6C and shows the results (r=0.989). (Table no. 3)

VALIDITY OF FFT -
The Fullerton Functional Fitness test is based on a functional fitness, which targets the capacity to perform everyday activities. The FFT test comprises six tests 30- second chair stand, arm curl, 6-minute walk test, chair sit and reach, back scratch, 8 foot up and go.

30 second chair stand (FFT1AV), arm curl (FFT2AV), 6-minute walk test (FFT3AV) asses the lower and upper limb strength and aerobic fitness and compare with 6MWT. (r= 0.094), (r=0.001),(0.001)Chair sit and reach(FFT4AV) test assess the flexibility and lower limb gait patterns and these test correlated with 6MWT,(r=0.246)time up and go(r= 0.001)and brief best test(r=0.265). Back scratch test(FFT5AV) asses the upper limb and lower limb flexibility, agility and balance are correlated with the Time up and go test and brief best test. (r=0.008), (0.013).8 foot up and go(FFT6V) is significantly correlated with time up and go(r=0.001). (Table no.-4)

DISCUSSION
Geriatric fitness depends upon reducing physical frailty and increasing functional independence. A large number of people believe that the quality of life in later years depends to a large degree on pain free functional independence for as long as possible. So it is imperative to frame effective exercise programs that aid geriatric population to maintain and improve their mobility. There is a lack of specific tests available to assess the functional Fitness of older individuals, particularly tests that have accompanying performance standards. To fulfill this requirement for a specific tool for older individuals, Fullerton Functional test was developed and validated as a new fitness test battery especially for older adults at California State University, Fullerton.[12]

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Objective of this study was to examine the test retest reliability of the FFT battery. In order to accurately assess an individual functional capacity, it is important to minimize the influence of extraneous factors such as practice or learning, to do this multiple session are required to test the reliability of the FFT battery in the Indian population. Examination of the test- retest reliability heterogeneity across tests with respect to the number of sessions required to achieve the stable performance.

The performance was stable on day 1 and but improved from day 2 to day 3. All the components of FFT measure the aerobic capacity, and upper limb and lower limb flexibility and strength, agility and dynamic balance.

The study shows the significant correlation in the test retest reliability in all the six components in the FFT. This is a highly reliable tool for assessing functional fitness in the elderly population. This tool measures a variety of physiological parameters and functional activities such as upper body strength, lower body strength, power, flexibility, agility, aerobic endurance, dynamic balance and body composition. In our study the 30 second chair sit stand test and arm curl test, six-minute walk test are validated with the six-minute walk test. Chair sit and reach tests are correlated with six-minute walk tests and time up and go, brief best test. Back scratch test is correlated with the time up and go and brief best test, 8 foot up and go test are correlated with the time up and go test.

AGE GROUP 50 -60 YEARS					
FEMALE(N=18)			MALE(N=27)		
VARIABLES	MEAN± SD	RANGE	VARIABLES	MEAN± SD	RANGE
AGE(years)	55.00±3.12	(50-60)10.00	AGE(years)	55.66±3.44	(50-60)10.00
BMI	26.38±3.40	(11-21)11.80	BMI	24.91±3.19	(31-24)15.20
AGE GROUP 61 - 70					
FEMALE (N=7)			MALE(N=23)		
VARIABLES	MEAN± SD	RANGE	VARIABLES	MEAN± SD	RANGE
AGE(years)	67.42±3.50	(63-74)11.00	AGE(years)	67.30±3.52	(61-75)14.00
BMI	25.42±1.69	(23-27)4.20	BMI	25.38±3.25	(16-33)16.90

Table No. 1: Demographic Variables As Per Age Group

AGE GROUP 50 -60 YEARS					
FEMALE(N=18)			MALE(N=27)		
VARIABLES	MEAN± SD	RANGE	VARIABLES	MEAN± SD	RANGE
FFT1AVG	35.70±4.44	(27-44)17	FFT1AVG	37.48±8.46	(23-61)37.67
FFT2AVG	18.80±1.869	(15-23)8	FFT2AVG	19.81±2.56	(14-26)12.00
FFT3AVG	432.2±31.5	(360-480)120	FFT3AVG	462.2±40.50	(420-540)120.00
FFT4AVG	1.22±3.44	(-3-12)15	FFT4AVG	2.74±8.03	(20-2.7)35.00
FFT5AVG	-.70±5.18	(-18-9)27	FFT5AVG	-2.79±5.33	(-12-13)25.00
FFT6AVG	9.75±.860	(9-12)3	FFT6AVG	9.71±.658	(8-11)3.00
BBTOTAL	23.27±1.12	(21-24)3.00	BBTOTAL	22.81±1.00	(21-24)3.00
AVG DISTANCE	95.33±48.50.50	(87-10)16	AVG DISTANCE	83.40±11.5	(21-24)47.38
TUG	9.72±.89	(9-12)3	TUG	9.74±.655	(8-11)3

Table No.-2a: Fullerton Functional Fitness Test Variables For Age Group 51-60

AGE GROUP 61 -70 YEARS					
FEMALE(N=7)			MALE(N=23)		
VARIABLES	MEAN± SD	RANGE	VARIABLES	MEAN± SD	RANGE
FFT1AVG	31.14±4.62	(24-37)12	FFT1AVG	36.2±5.40	(25-46)21
FFT2AVG	15.90±1.31	(14-18)3	FFT2AVG	18.5±2.12	(15-23)8
FFT3AVG	377.14±57.07	(300-420)120	FFT3AVG	442.1±38.6	(360-540)180
FFT4AVG	.57±2.99	(-4-6)10	FFT4AVG	-.318±5.13	(-11-10)21
FFT5AVG	-5.14±6.89	(-16-00)16	FFT5AVG	-5.00±9.05	(-24-15)39
FFT6AVG	11.2±2.56	(9-15)6	FFT6AVG	9.82±.491	(9-11)2
BBTOTAL	19.85±1.77	(17-22)5	BBTOTAL	21.86±2.30	(17-24)7
AVG DISTANCE	86.6±82.50	(66-86)20	AVG DISTANCE	18.8±1.77	(14-22)7
TUG	11.28±2.56	(9-11)6	TUG	9.82±.491	(9-11)2

Table No. 2b: Fullerton Functional Fitness Test Variables For Age Group 51-60

Correlations

		FFT1A	FFT2A	FFT3A	FFT4A	FFT5A	FFT6A	FFT1C	FFT2C	FFT3C	FFT4C	FFT5C	FFT6C
FFT1A	Pearson Correlation	1	.658**	0.225	-.251*	0.212	-.274*	.970**	.654**	0.185	-.254*	0.21	-.246*
	Sig. (2-tailed)		0	0.05	0.029	0.067	0.016	0	0	0.109	0.027	0.068	0.032
FFT2A	Pearson Correlation		1	.405**	0.058	0.094	-.303**	.610**	.940**	.375**	0.066	0.092	-.286*
	Sig. (2-tailed)			0	0.617	0.418	0.008	0	0	0.001	0.572	0.427	0.012
FFT3A	Pearson Correlation			1	0.217	.289*	-.514**	0.182	.377**	.944**	.230*	.286*	-.499**
	Sig. (2-tailed)				0.06	0.011	0	0.115	0.001	0	0.046	0.012	0
FFT4A	Pearson Correlation				1	.245*	-0.081	-.259*	0.021	.260*	.990**	.246*	-0.081
	Sig. (2-tailed)					0.033	0.485	0.024	0.86	0.024	0	0.032	0.485
FFT5A	Pearson Correlation					1	-.281*	0.164	0.067	.380**	.243*	1.000**	-.284*
	Sig. (2-tailed)						0.014	0.157	0.563	0.001	0.034	0	0.013
FFT6A	Pearson Correlation						1	-.253*	-.298**	-.503**	-0.087	-.281*	.989**
	Sig. (2-tailed)							0.027	0.009	0	0.456	0.014	0
FFT1C	Pearson Correlation							1	.655**	0.153	-.256*	0.163	-.232*
	Sig. (2-tailed)								0	0.188	0.025	0.159	0.044
FFT2C	Pearson Correlation								1	.379**	0.041	0.065	-.300**
	Sig. (2-tailed)									0.001	0.724	0.576	0.008
FFT3C	Pearson Correlation									1	.283*	.377**	-.519**
	Sig. (2-tailed)										0.013	0.001	0
FFT4C	Pearson Correlation										1	.245*	-0.091
	Sig. (2-tailed)											0.033	0.434
FFT5C	Pearson Correlation											1	-.284*
	Sig. (2-tailed)												0.013
FFT6C	Pearson Correlation												1
	Sig. (2-tailed)												

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Table No. 3- Test Retest Reliability Of Fft

Correlations

		BB1	BB2	BB3	BB4	BB5	BB6	BB.T	TD	TUG	FFT1V	FFT2V	FFT3V	FFT4V	FFT5V	FFT6V
BB1	Pearson Correlation	1	0.192	.441**	.268*	.587**	-0.04	.530**	0.173	-0.026	0.148	0.192	0.179	0.072	0.134	-0.027
	Sig. (2-tailed)		0.097	0	0.019	0	0.723	0	0.136	0.824	0.202	0.096	0.122	0.538	0.248	0.817
BB2	Pearson Correlation		1	0.181	0.164	.287*	.230*	.531**	.248*	-.343**	-0.03	0.088	.261*	0.19	0.083	-.330**
	Sig. (2-tailed)			0.119	0.157	0.01	0.045	0	0.031	0.002	0.797	0.45	0.023	0.1	0.475	0.004
BB3	Pearson Correlation			1	0.217	.505**	-0.06	.583**	0.16	-0.039	0.031	0.212	0.167	0.154	.262*	-0.04
	Sig. (2-tailed)				0.06	0	0.597	0	0.168	0.74	0.787	0.066	0.149	0.185	0.022	0.731
BB4	Pearson Correlation				1	.427**	0.131	.775**	.250*	-0.183	0.225	.317**	.264*	.302**	0.173	-0.187
	Sig. (2-tailed)					0	0.258	0	0.029	0.113	0.051	0.005	0.021	0.008	0.134	0.106
BB5	Pearson Correlation					1	-0.05	.672**	.246*	-0.032	0.069	0.204	.254*	.312**	0.195	-0.033
	Sig. (2-tailed)						0.659	0	0.032	0.782	0.551	0.077	0.027	0.006	0.091	0.774
BB6	Pearson Correlation						1	.285*	.342**	-.607**	0.184	0.205	.351**	0.033	0.167	-.608**
	Sig. (2-tailed)							0.012	0.002	0	0.111	0.076	0.002	0.78	0.149	0
BB.T	Pearson Correlation							1	.410**	-.368**	.237*	.383**	.428**	.265*	.283*	-.368**
	Sig. (2-tailed)								0	0.001	0.04	0.001	0	0.02	0.013	0.001
T.D	Pearson Correlation								1	-.487**	0.194	.411**	.978**	.246*	.319**	-.486**
	Sig. (2-tailed)									0	0.094	0	0	0.032	0.005	0
TUG												0.03	0.008				0
FFT1AV	Pearson Correlation										1	.657**	0.197	-.265*	0.177	-.245*
	Sig. (2-tailed)											0	0.088	0.021	0.126	0.033
FFT2AV	Pearson Correlation											1	.395**	0.047	0.101	-.300**
	Sig. (2-tailed)												0	0.687	0.386	0.008
FFT3AV	Pearson Correlation												1	.240*	.357**	-.517**
	Sig. (2-tailed)													0.036	0.002	0
FFT4AV	Pearson Correlation													1	.275*	-0.087
	Sig. (2-tailed)														0.016	0.454
FFT5AV	Pearson Correlation														1	-.286*
	Sig. (2-tailed)															0.012
FFT6AV	Pearson Correlation															1
	Sig. (2-tailed)															

cant at the 0.01 level (2-tailed).

ant at the 0.05 level (2-tailed).

Table No. 5: Correlation Table For Validity

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