

## Exploring of Physical Fitness of Burundian Athletes

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### Abstract

**Back ground:** Physical fitness can be common to several sports. The objective is to increase the different capacities of the body like endurance, strength, speed, flexibility, performance, VO2 max, sheathing, agility, and accuracy.

**The purpose** of this look out were: (1) to assess the current status of physical fitness of Burundian athletes, (2) to compare the physical fitness performance on the standard's physical fitness value, (3) to found out the benefits of physical fitness on the athlete's performance.

**Research methodology** This is exploring research with mix method qualitative and quantitative study. The sample of this study were 42 from physical Education and Sports at the University of Burundi. The subjects were taken by random. The subjects were aged between 20-30 years, they were from in many various parties of Burundi Country. The data collection technique was physical battery test on the playground. Data were analyzed with descriptive statistic. The result showed that the current status of physical fitness level of Burundian athletes still low, the result showed also that there is a significant different between physical fitness means and standards means in each category of variable with P value .000, the result from this study showed that physical fitness has a great important in overall sports to increase achievement but also improve human mental and health.

**Conclusion:** physical fitness is the key to reach the high goals or achievement, all coaches have to train their athletes with suitable programs training in order to expect the high performance.

**Keywords:** *strength, flexibility, endurance*

### Introduction

Muscle capacity assessment is an important factor in the performance of an athlete. Coaches should be equipped with the ability to assess the physical abilities of athletes before proceeding with training programs (Fauteuil, Fédéral, & Patrice, 2004). The physical fitness qualities well defined as: (1) Force: the ability to move a mass. It can be coupled with speed, (2) Flexibility: amplitude of movement that a joint can achieve, (3) Speed: ability to move in a minimum of time, (4) Resistance: ability to perform very important muscular work for a short period of time, (5) Endurance: possibility of performing continuous effort over a long period of time, (6) Coordination: ability to chain

movements to achieve a precise gesture (Inocentio, 2020).

The physical fitness test has a great important for every party of sport administration like: (1) for athletes: know their strengths and weaknesses, (2) for training: know the possibilities and limits (trainability): optimize potential, define the content of the training (load), (3) for the coach: measure adaptation, progression or regression: establish a work program, validate steps and set priorities or objectives, (4) for the institution: measure, classify and compare capacities and aptitudes: identify talents, bring together potentials, build teams (Markovic, Dizdar, Jukic, & Cardinale, 2004, Acero, Sánchez, &

Fernández-del-Olmo, 2012, Ambroży et al., 2021).

Physical activity can be done from different ways: walking, cycling, running, sports balls, and recreational activities (for example, dancing, yoga, tai chi). Physical activity can also be practiced at work and at home. All forms of physical activity can be beneficial to health when they are practiced regularly with intensity and for a sufficient period (OMS, 2018, Polero et al., 2021).

Physical activity is important at any age. Play and active leisure are important for early childhood, as well as for growth and healthy development of children and teenagers (Ndayisenga & Tomoliyus, 2019). Quality physical education and supportive school environments can be a source of information on the physical activity and health from the perspective of a long-term healthy and active life. It is also important that adults are physically active and less sedentary at job. Whether they work or not, older people, in particular, can engage in regular physical activity in order to maintain physical, mental and social health but a physical test is needed in order to orient easily the training (Turgut, Soylu, & Metin, 2020).

One study showed that count movement jump test determined how muscles were apt to allow performance through concentric and eccentric movements within respective P value: ( $P \leq 0.033$ ); ( $P = 0.002$ ) (Mitchell, Holding, & Greig, 2020). The energy and pace variables have been dependable from the factor the place force became into an increasing price while displacement from minimal speed was once reached. Net impulse and ratios of pressure development confirmed high and suited values (Warr et al., 2020). The Counter Movement Jump (CMJ) is widely used as a discipline test to evaluate the muscular explosive power of decrease limbs in a variety of sports, such as soccer, basketball, volleyball. Etc (Quagliarella et al., 2011). Physical fitness test is a great instrument used in order to assess the abdominal muscular endurance of service-members (Bianco et al., 2015). Physical fitness battery test is more important to reach the performance of athlete (Petrigna et al., 2020). Another research showed that Results: McGill

protocol was positively correlated with medicine ball throw test ( $r = 0.688$ ) and vertical jump test ( $r = 0.463$ ). A strong negative correlation of McGill was identified with 40-yard dash test ( $r = -0.525$ ) and T test ( $r = -0.687$ ). At the same time DLL was positively correlated with 40-yard dash test ( $r = 0.374$ ) and T test ( $r = 0.524$ ). Only medicine ball throw test related significantly with the tests of core power (Shaikh, Nuhmani, Kachanathu, & Muaidi, 2019). However, the result from one study the athletes performed commonly used flexibility tests (stand-and-reach, straddle sit, straddle stand) and climbing-specific flexibility tests. Significant correlations were found between sport skill levels for the straddle stand test ( $r = -0.48$ ) and the straddle sit test ( $r = -0.41$ ) (Draga et al., 2020).

#### **Why this research is important?**

Based on the research done, and the important of physical fitness battery test, it was found that in Burundi country there is no physical fitness test done. The Burundi Country was characterized by a strong lack of scientific research. The basic physical fitness level of Burundi athlete still unknown. However, if there are no more studies linked to the physical fitness test of athletes, there is no hope to reach the goals or high achievement. This study will help researchers to know the current status of Burundi athletes. The result from the later look out will also help physical education, and coach trainer to know the strong and weak points of their athletes.

#### **Research Methodology**

This is an explorative research with mix method qualitative and quantitative study. The sample of this study were 42 from physical Education and Sports at the University of Burundi. The subjects were taken by random. The subjects were aged between 20-30 years, they were from in many various parties of Burundi Country. The data collection technique was physical battery test on the playground. Data were analyzed with descriptive statistic.

#### **Procedure**

To assess the level of physical fitness of the subjects a battery test was conducted like (1) count movement jump (CMJ) to assess the explosivity of the low limbs muscles using myotest, (2) the muscle abdominal endurance was assessed by sit up during 1 minute, (3) the

flexibility was determined using flexor meter, Grip strength using manual flexor meter right and left arm, (4) Strengthen using push up during 1 minute. All the subjects have the battery test at the same time.

### Result

The data were representative in the form of tables, after each mean of the data was compared on normal value to assess if the subjects have a good physical fitness. The level of classification was: excellent (E), very good (VG), good(G), middle(M), and worse (W).

**Table 1: Physical fitness test battery**

CMJ in cm		Sit up/60sec		Flexibility in cm		Grip strength left in N/Kg		Push up/60sec		Grip strength Right in N/Kg	
46	G	15	W	40	G	38,2	W	21	W	40,4	W
55	G	32	W	35,5	G	41,8	W	25	M	50,6	M
39	M	27	W	26	W	33,8	W	25	M	43,2	W
46	G	20	W	31	W	36,5	W	20	W	38,1	W
45	G	31	W	32	W	33,8	W	36	VG	38,5	W
46	G	21	W	32	M	46,1	M	23	M	36	M
49	G	38	M	30	W	39,3	W	24	M	41,7	W
55	G	32	W	25,5	W	41,4	W	33	G	40,4	W
45	G	31	W	32	W	33,8	W	36	VG	38,5	W
46	G	29	W	34,5	M	41,3	W	15	W	46,2	W
46	G	21	W	32	M	46,1	M	23	M	36	M
52	G	26	W	18	W	38,6	W	18	W	43,7	W
40	G	12	W	34,5	M	27,1	W	20	W	33,6	W
46	G	19	W	35,5	G	41,8	W	23	M	48,2	M
59	G	37	W	35	M	48,3	M	32	G	50,8	M
33	M	21	W	33,5	M	34,3	W	24	M	39,4	W
43	G	11	W	45	G	30,6	W	16	W	28,1	W
36	M	17	W	38,5	G	32,6	W	22	M	36,3	W
31	M	9	W	47	G	19,2	W	15	W	21,9	W
39	M	13	W	41	G	39,3	W	18	W	40,8	W
49	G	46	G	41	G	39,3	W	38	VG	39	W
63	VG	38	M	29,5	W	55,6	G	35	G	58,6	M
47	G	30	W	37,5	G	33,5	W	28	M	36,7	W
49	G	28	W	14,5	W	43,1	W	27	M	39,3	W
52	G	31	W	30	W	35,6	W	24	M	40,1	W
48	G	30	W	10	W	35,8	W	19	W	41,7	W
36	M	27	W	17	M	45,5	M	24	M	38,8	M
48	G	21	W	39	G	50,6	M	20	W	48,6	M
31	M	26	W	29,5	W	27,5	W	22	M	40,3	W
37	M	29	W	19	W	40,4	W	20	W	37,2	W
51	G	32	W	34	W	41,8	W	20	W	53,9	M
60	VG	21	W	38	G	34,7	W	22	M	32,4	W

43	G	21	W	18,5	W	35,5	W	26	M	39	W
39	M	17	W	35	M	35,5	W	12	W	35,5	W
34	M	19	W	32,5	M	32,2	W	15	W	28,1	W
55	G	31	W	30	M	40,7	W	34	G	44,9	W
48	G	24	W	33,5	M	31,5	W	18	W	29,9	W
50	G	23	W	36	M	47,6	M	17	W	46,9	M
46	G	23	W	25	W	35,1	W	18	W	36,8	W
38	M	25	W	21,5	W	40,6	W	18	W	43,6	W
44	G	32	W	33	M	40,3	W	24	M	40,6	W
46	G	30	W	37,5	G	24,4	W	28	M	30,3	W

Regarding to the guideline of CMJ level the research of this study has easy to classify each subject tested. The sit up was classified using the Pate's theory 1995. On the hand of sit up more than 99% have insufficient level. The later means that the subjects still need a suitable

training to develop the abdominal muscles. The result from the table above showed that 50% the subjects have a good CMJ. The CMJ level has been taken according to the level given by Ruffier (1980). The research classified CMJ like:

**Table2: Classification of the CMJ (Ruffier, 1980)**

Height	H<30cm	30<h<40m	40<H<60cmc	60<H<80	80<H
Level	weak	Middle	Good	Very Good	Excellent

**Table 3: One-Sample Test**

	Test Value = 41					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
CMJ	3.848	41	.000	4.500	2.14	6.86

Based on the classification CMJ level, the above result showed that there is a significant different between the subjects' data and the normal value of CMJ within P value (.000). the SD (7.578) showed that the population was heterogeny on that CMJ parameter or variable.

The abdominal strengthen muscles is more need for some sports like judo, karate, fitness, running, athletic, volleyball, rugby. The result showed that there was a significant different (P=0.000) between the subjects' data and reference normal value (42cm) The coach trainer cannot expect the high achievement whether muscles still unstrengthen.

The result showed that the subject flexibility level still in the need of improvement as well known that the flexibility is a physical quality to execute motion without more difficult.

Comparing the mean of the subject's data, the result showed that there was a great significant different (P=0.000) between the flexibility level of the subjects compared to the normal mean (35cm). If the subject misses the flexibility, he rarely succeeds the high performance like in the gymnastic, karate, football, and others sports. From the result above more than 80% have a low flexibility.

About the push up the result showed that only 16,6% from the surveyed population have good level. The research showed that there was a significant different P (0.000) between the global mean subjects and the reference mean (36 push up/60sec) based on the subjects ages. The subjects were not homogeny about that variable within SD: 6.41, the later showed that each subject was far from other about push up

performance. The later percentage showed that the subjects still need suitable training programs to increase strength because the force is a physical quality without it, movement or motion

is not possible. All sports need the using of strengthen even though the its level is different but the force must be presented.

**Table 4: Compared Grip strength means with ANOVA**

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	201495.619	35	5757.018	17.494	.001
Within Groups	1974.500	6	329.083		
Total	203470.119	41			

On the hand of grip strengthen left and right, the result above showed that there is a strong significant different between the two types of data. If each date compared by the normal value (left 56, and 62 for the right), the result showed that the subjects have low grip strengthen arms. So, the most of the subjects still need to improve the arms force. They need strengthen program like push up, pull up, heterophily.

### Discussion

The result found showed that most subjects have a low level comparing to the normal value. The count movement jump was a test used to evaluate the explosivity of the low limb's muscles. The result found showed that there is a great different between their mean ant the reference means with P value .000. It is important to always to evaluate the physical fitness of athlete in order to know the weakness and the strengthen of the athlete(DiPietro et al., 2019).The countermovement soar (CMJ) is an integral motor skill for a variety of sports includingvolleyball, soccer and basketball. For basketball in particular, CMJ performance may also supply atechanical/tactical facet in both offensive and protecting moves (i.e., enhancing the chance ofeffective shots, rebounds and blocks(Petrigna et al., 2019, Rauch et al., 2020).

A systematic review showed that functional training is beneficial for the overall physical fitness of athletes, however the sit up is more benefit in increasing of abdominal muscles strength(Xiao et al., 2021). The result above showed that the sit up and push up still in low level compared to the normal value, but one research showed that push up and sit up are more benefit to build the whole physical body(Roberts, Smalley, & Ahrendt, 2021).

In Burundi country trainers need to improve again their training programs in order to allow athlete to reach the high performance in different sports fields. Physical fitness is more based on age, nutrition, gender, climate, environment, program training, the qualification of the coach(Peterson, Middleton, & Christman, 2019). The causes of the low physical fitness of Burundi athletes are among others the lack of training, the unsuitable training programs, the low know knowledge of some coach's trainers. Sit up, push up, CMJ, flexibility, grip strengthen exercise are more benefit for the athlete to improve muscles mass, core strength, posture, balance, athlete performance, academic achievement, and reduce risk of human body injuries(Childs et al., 2009). The global result from this study showed that Burundi athletes have low physical fitness. They still need more suitable programs to allow them to reach the high performance.

### Conclusion

This study was about to investigate the current status of Burundi athletes on chosen variables like CMJ, sit up, push up, flexibility, grip strengthen muscles. The problem was to assess if Burundian athletes have a qualify level of each parameter. The result showed that they have a low physical level comparing to the normal value. The result constitutes a good way or statement to help coaches' trainers from Burundi to remember to assess various physical fitness athletes. The research recommended also for the following study, an interested researcher could assess the VO2 max, coordination, agility, speed, and accuracy.

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### Conflict of interested

The researches declared that there is no conflict of interest

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