

# PHYSICAL CONDITIONING: TOWARDS EFFECTIVE PERFORMANCE IN SPORTS AND PREVENTION OF INJURIES.

BY

KAJANG YAKUBU GORAH and AUDU ANDREW JATAU

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## ABSTRACT

*Athletes who frequent themselves with almost year round competitive sports are most prone to injuries. As it is normally said, prevention is better than cure. This paper has suggested a dynamic approach on how injuries could be prevented. This paper has emphasized certain principles that if observed and followed will bring about good conditioning of athletes. The paper has also suggested approaches designed towards developing a free sport injury conditioning programme.*

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## INTRODUCTION

Physical Conditioning is synonymous with physical fitness. Either of the two is capable of making an athlete to be able to participate in a game or sporting activity with great endurance and less fatigue. Gamba (1988) quoting Klafs and Arnheim (1981), laments physical conditioning as the "role played through conditioning exercises in getting the body ready for sporting activities". But Nossek (1982), sees Physical conditioning as "the performance capacity of a sport man". He also noted that, "the expression used for physical condition in the domain of high sports performance is physical fitness".

Against this backdrop, it holds that the focus objective in training is to bring about biologic adaptations in order to improve performance in specific tasks (Sing, 1987). This thus, establishes the fact that the basic aim of physical conditioning is to train the athlete to reach a good fitness level so that incidence of injury is reduced to the barest minimal level. This is notwithstanding the fact that sports are injury prone as a result of constant body contact, hazards attached with missiles throw and also risks associated with jumps and runs. All these potential accidents could be as a result of muscles imbalance, improper timings because of poor neuromuscular coordination, lack of lodgements on tendons strenuous strength, lack of flexibility and inadequate muscle built originating from insufficient or improper physical conditioning (Klafs and Arnheim, 1988)

This separately led Gamba (1988) and

Sing (1987) to conclude that doctors, trainers and coaches view serious sports injuries arising from areas associated with Musculo-skeletal system. In this instance, it is surmised here that these injuries may be reduced by proper and thorough physical conditioning,

To ensure that athletes are properly conditioned, muscle bulk and strength must be built to protect muscle cramp and muscle tears (Sing, 1987; Klafs and Arnheim, 1977). Furthermore, it is also surmised that in order to avoid some of these unforeseen injuries, tendons and ligaments must be strengthened and toughened to enable the fortification of the joints for the purposes of not only full and effective range of movements but for also stability reasons (Gamba, 1988; Sing, 1987 and Klafs and Arnheim, 1977). It must be noted that to achieve over-all fitness and endurance, the athletes or personalities in need of the physical fitness must have the ability to do prolonged work-outs without undue fatigue.

To determine the number of the work-outs needed with less fatigue, Folawiyo (1988) noted that, the amount and duration of physical conditioning required is different from person to person and from sport to sports. Wilmore (1977) supports this by stating that, "exercise capacity varies widely among individuals, even when they are of similar age and physical built". It behoves therefore for coaches, trainers and teachers to take into careful consideration the level of physical fitness and the goals of the individuals before prescribing any form of physical

conditioning workouts. On the procedures for the physical conditioning, Gamba (1988) quoted Burke (1978) and asserted that the athlete must warm-up properly to raise deep muscle temperature so that muscle tears and strains can be prevented and effective sports performance ensured. Furthermore, it is also noted that neuromuscular skills will affect good motor performance and this must be developed along with speed and endurance. However, inability to develop this skill will render one awkward, slow or tied and most probably prone to injury. (Gamba, 1988). For the purposes of actualizing this, we must lay emphasis on good, gradual and complete physical conditioning of the athlete before embarking on any kind of competition. The planning should therefore be carefully done through-out the year for the athlete to seriously minimize the number of possible injuries. This is further understood by the fact that athletes who enter into competition period after a poor pre-season training programme or begin preliminary training in a state of physical unfitness are excellent prospects of sport injury. For this reason, trainers must plan a conditioning programme and see that the athlete follows it religiously during off and on-season periods. This thus brings to question the need to study and take into account the physical and physiological condition of the athlete during the in and out of competition periods (Gamba, op.cit).

### **TOWARDS DEVELOPING AN INJURY FREE CONDITIONING PROGRAMME**

To develop an injury free programme, entails a systematic process of repetitive, progressive and gradual work that should include the learning process for the athlete, and the coach. The programme must be designed to develop the total individual that may bring about muscular endurance, mobility, power, prowess, strength, skill and speed. Folawiyo (1988) sees this kind of an all encompassing programme as "a balanced total fitness programme that does over emphasize one aspect of physical development". But that to achieve that, then one should include isometric, isotonic, calisthenic, weight training, jogging and running exercises". For these will help to take care of sports in which all parts of the body are exercised well.

After months or years of participation in physical conditioning programme, many athletes quit training without achieving their goals because of wrong conditioning programme, poor planning for the training or due to injuries sustained as a result of increased pressure on athletes to improve their performance. Furthermore, the pressure could be due to economic, social or as a result of national expectation. This heightened drive to achieve, usually causes the athletes to over stretch themselves by adapting erroneous training schedules. Perhaps, this may result in over use some of body systems, and if not properly handled could cause an athlete to be laid off, thereby aborting their immediate long term goals for achieving success.

Therefore the programme should focus on activities that bring about total fitness as suggested by Folawiyo (1988). Meanwhile it should be noted that Isometric exercises generate heat and energy by forcefully controlling the muscles in a static position while isotonic exercises are the opposite of the former. Isokinetic exercises utilizes the whole muscle fibres but the resistance varies according to the angle of pull and the degree of fatigue developed through out the exercise period. In this kind of endeavour, the programme must be motivation oriented to be able to achieve the set goal and should be strictly followed, but should be checked and controlled regularly for this will help both the athlete and the Coach. To accentuate this kind of posture, Nosssek (1982) suggested five steps to be followed and the programme be regulated.

These include:

- (a) *Diagnosis of the actual initial level of physical condition using different tests.*
- (b) *Consider the weak and strong points when preparing the conditioning programme.*
- (c) *Carry out the training programme for a certain planned period.*
- (d) *Checking the improvement of the physical condition by means of observation, assessment, special conditional tests for competitions.*
- (e) *Comparison of the initial conditional standard with the present one, evaluation*

*conclusion.*

This as might be, it is advised that all those that have not been active or have low exercise tolerance should pace themselves carefully when participating in vigorous sports until they are fully conditioned. To buttress this position, it is further stated that conditioning requires a minimum of six weeks of warm-up, calisthenic or weight training and so also are the kinds of programmes that cater for the special needs of women in order to improve their muscular strength and their circulatory endurance for the purposes of enabling them to participate in such activities as tennis, gymnastics or volley ball (Folawiyo, 1988). It is expected that the realization of the above points will strengthen their back and abdominal muscles.

On type of clothing the athletes should wear, kinesiologists, coaches, trainers, teachers, and athletes are advised to be careful in selecting the clothes to be worn. Such should be custom made to cater for weather, age, and type of activity to guarantee safety (Amuchie, 1988).

**PRINCIPLES OF CONDITIONING**

Observation has shown that in order for the athlete to satisfy himself, his needs and at the same time fulfil his obligations of attaining his goals, he must possess some qualities such as organic soundness, strength, vitality, emotional stability, social consciousness, knowledge and insight to face his task squarely.

For athletes to achieve the maximum from the concept of physical conditioning programme, the following cardinal principles are recommended.

1. *WARM-UP*:- First and foremost, the trainer or coach should ensure that proper and adequate warm-up precede all activities in sports. Trainers and coaches should prescribe warm-up to aid the body to prepare itself physiologically and psychologically in order to achieve effective physical performance and this also lessen the possibilities of injuries (Graig 1973, quoted by Gamba, 1988). Proper Warm-up is also noted to prevent and reduce strains and tearing of muscle fibres from their tendon attachments. (Morehouse and Gross, 1977). Studies have also shown that proper warm-up can reduce or prevent muscle soreness (Devries, 1974).

2. *PROGRESSION*. Conditioning activities for preventive measures should increase in work load, tempo, quality, and exercise daily. The gradualness would assist the athlete to adjust in due cause to the training and so prevent unnecessary injuries. This normally takes 6-8 weeks of intensive training for proper conditioning to take place (Orok and Boateng, 1983; Gamba, 1988 and Klafs and Arnheim, 1977).

3. *TIMING*:- Tired athletes are prone to injury, it may be necessary to train in the early morning and in the evening until the athletes adjust themselves to the time training. This is known to coaches and trainers for effectiveness (Orok and Boateng 1983).

4. *INTENSITY*:- The intensity of work should be stressed rather than quality or duration. The trainer should increase the tempo of a work load as the duration increases. The intensity of training must increase to ensure a beneficial training. As the degree of training on specificity or conditioning increases, so also increase on preventive conditioning (Sing, 1987)

5. *CAPACITY-LEVEL*: Athletes can only improve their performance if they can be trained to achieve their physiological capabilities as much as their health and safety factors will permit. A realistic means by which athletes quickly achieve their capacity levels for better performance is expected to lay emphasis on both preventive and therapeutic conditioning. Therefore, if desired results are to be achieved, emphasis must be laid on preventive conditioning and the physical working capacity of the athlete must be known and maintained (Gamba, 1988 and Ogunbiyi, 1988).

6. *STRENGTH*: Endurance and speed can only be achieved if conditioning exercises can develop strength. Efforts should also be made to inject these basic conditioning components into the training bouts for the athletes (Ogunbiyi, 1988). Some of these major components of physical fitness are endurance, speed, accuracy and coordination. Achievement of strength could prevent athletic injuries and thus enhance good performance (Gamba, 1988 and Ogunbiyi, 1988).

7. *MOTIVATION*: There should be a variety of interesting conditioning exercises to avoid

monotony and boredom. Occasionally, conditioning activities for prevention of injuries should be laced with circuit training, weight training, games of low organization and conditioned games such as basketball, handball, soccer, etc. (Gamba, 1988). With appropriate type of motivation, athletes would learn faster and this in turn would prevent athletic injuries and enhance a better performance (Ogunbiyi, 1988)

8. **SPECIALIZATION:** Athletes have their special fields and talents. So conditioning activities that would improve individual's field of specialization should be emphasized (Orok and Boateng, 1983). If athletes are conditioned in special fields of their talents, injuries will be minimized and excellent performance can be achieved. To this end, modern methods of athletic training will encourage natural athletes for effective performance.

9. **RELAXATION:** Special conditioning exercises suitable for relaxation should be taught. Many athletes can be tensed and this at times

causes unnecessary injuries (Ogunbiyi 1988). Relaxation conditioning exercises should be introduced to prevent injuries and improve athletes' performance. There should be a time interval between set routines for exercises.

10. **ROUTINE:** Athletes should be educated that the trainers cannot be with them all the time. A daily routine of exercises both in-season and off-season should be established for all the athletes which could be a guide to them always. This would yield good results in their performance and reduce incidence of injuries (Ogunbiyi, 1988).

It must be noted that the following training programmes must be included and be followed religiously and tactically. These include circuit training, interval training, overload principle, inter-circuit training programme and fart-lek as well as off-season conditioning and pre-season conditioning.

Venkateswarlu (1987) suggested that the following training methods may be used;

#### DISTRIBUTION OF TRAINING METHODS IN PERFORMANCE IN DIFFERENT PERIODS OF A TRAINING YEAR

	PREPARATORY PERIOD			PRECOMPETITION PERIOD		COMPETITION PERIOD	TRANSITION PERIOD
TRAINING SEASON METHODS	1	11	11	1	11	-	-
INTERVAL TRAINING	-	20	40	80	80	70	-
WEIGHT TRAINING	15	20	20	10	5	30	-
CIRCUIT TRAINING	17	40	20	-	-	-	-
CONTINUOUS TRAINING	70	40	20	-	-	-	20
PRESSURE TRAINING	-	-	-	-	15	-	20

#### CONCLUSION

In conclusion, an adequately planned physical conditioning programme based on scientific facts that has been tested and found to be result oriented if religiously followed will help athletes to achieve their desired goals. It can be concluded from this write-up that a combination of the principles, training methods and adequate knowledge of Kinesiology will go along way in helping the coach, trainer and the athlete.

#### RECOMMENDATION

In view of the truth that there can be no effective performance without a properly planned and workable physical conditioning program, it is hereby recommended that:

- (1) The trainer, teacher and coach must have the knowledge of the athlete, equipment, environment, facilities, nature of force and likely dangers, involved by each type of exercise to be performed

- (2) There is the need to instruct athletes on the potential dangers they are likely to meet if certain mechanical principles are neglected.
- (3) Athletes should be instructed to wear appropriate protective instruments.
- (4) Trainers, coaches and teachers must always evaluate the advantages and disadvantages of every exercise before including them in the physical conditioning programme and must be followed religiously.

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