Long Jump Training Programs for Indonesian Athletes

E Nugraha[1*], F Dliss[2] and M Asmawi[2]

[1]Fakultas Pendidikan Olahraga Kesehatan, Universitas Pendidikan Indonesia. Jl. Dr. Setiabudhi No 229 Bandung

[2]Sekolah Pascasarjana, Universitas Negeri Jakarta, Indonesia

*ekafok@upi.edu

Abstract. This research is aimed with the concern of applying parameter test based on long jump program for improving of Junior Indonesian athlete's performance. The method used in research was an action research through parameter test application that was adjusted to the rules and characteristic of double periodization long jump training, and it was conducted with 10 action phases. This research is helped by 2 coaches as collaborators, who were intensively active in pre-observation, Planning, Actions, Observation, and Reflection. Research's result finds that the parameter test applied in the personal training program had successfully improve the long jump personal best performance to the Championship 23rd SEA Games 2005 in Philippines compared the average of parameter test result more than 90%

1. Introduction

The successful achievement of long jump in athletic is presented in the form of the furthest distance of long jump that athletes could achieve from six legal jumps, and such achievement could not be achieved without a good training plan. Training plans are usually presented in such format which is called periodization training, this kind of training is used only for certain of time and for certain period. Periodization training is an effort to minimize training steps to gain optimal result of said training with particular goal. [1] [2] [3] [4] .

Periodization training is divided into 3 (three) training phases, which is: Preparation (general preparation and special preparation, Competitive (pre-competition and main competition), Transition. [2] [4]. These training phases are further divided to smaller orientation phase of the cycle, suitable with modern periodization training concept from L. Medvedev which is: macrocycle, training phase, mesocycle and macrocycle. [4]

The orientation of athletes' potential development on modern training is more intact and thorough. The performance of sports' achievement is a mirror of athletes' physical and mental development, athletes are supposed to be a balanced individual [5], athletes are also expected to be intelligent also own and ability to self-asses themselves so that in each of themselves will develop a quite high level of cognitive and affective ability thus athletes would be personally more independent, self-confident and in each athlete will emerge the awareness of their own image, also this could become a feedback for athletes even coaches to plan the next training program.

Evaluation on sport training plan is an integral part that is related to the training's objective achievement. Evaluation is essential to the athlete's progress, as coach applies the cycle: DREAM – PLAN – DO – REVIEW. The success of training program is largely dependent upon satisfying the performance aims associated with it (evaluating). [6]

Parameter test is an evaluation device that is based on process and product to collect factual data from various aspect of dominant physical biometer, athletes' skill on field and this test is done for forming a more thorough training plan. Evaluation of training results' performance tends to be oriented to a single aspect of achievement.

Dominant physical biometer (such as velocity and strength) also athletes' mastery of long jump skills (technique) becomes parameter of process and product evaluation which is connected towards achievement of athletes' training's performance in long jump program. Furthermore, said parameter would be used as a base component on training plan. Jumping, one of the event in athletic which rely mostly on power consisted of 4 (four) technical phase, **i.e.**: (1) approach run up, (2) take off, (3) flight on air, and (4) landing. To obtain maximum distance of long jump result, these 3 (three) components such as velocity, technique and strength, must exist. [7]

The effort developed by Andrian Samungi, the coach of long jump world champion from Romania, Anişoara Cuşmir, by gathering various training results' parameters which is related to all individual statistic data as training results' indicator, is presented on XIII Congress of European Athletics Coaches Association,1985 [8]. Observations that are too detailed and broad would be an obstacle if applied in Indonesia conditions which differs. But in fact, it could open opportunity to design a training program planning which is oriented on athletes as a whole human being. Such test is packaged around process and product-based parameter test as feedback. Program evaluation system places athletes as a party who receive direct benefits thus, athletes are expected to be able self-improve themselves.

Based on argument above, therefore the aim for this research is to: (1) conducting field test regarding application of parameter test on Indonesian athletes' long jump training program, and the benchmark of average percentage is based on long jump parameter test as a whole, and (2) to discover the extent of the application of parameter test on Doni Susanto training program with the background and context of research towards achievement improvement factually.

2. Method

This research is aimed to improve performance, which nature is contextual and the result is not for generalization. Action research is a small-scale intervention and its function in real world is as an effort to collect information systematically in solving problems, collaborating with many parties as an effort to improve action quality on decision making about future practice. [10], [11], [12].

The key concept of action research consists of 4 (four) components, i.e.: (1) planning, (2) action, (3) observation, and (4) reflection, not done in rigid sequence, [11] [10]. Eliot however has 5 activity phase, i.e.: (1) Pre-observation, (2) General plan of action, (3) Action, (4) Observation, and (5) Reflection [13].

Data collection technique used on this research use certain instruments. Instruments such as parameter test which is needed to assess the performance of subject/athletes during training process.

Meanwhile validity criteria include: (1) democratic validity, (2) dialogic validity, (3) result validity, (4) process validity, and (5) catalytic validity. [14]. Data analysis is conducted during the process of action (*on-going process*). Data analysis, referring to Becker, includes 4 (four) steps, i.e.: 1) data collecting, 2) data validation, 3) data interpretation, and 4) action plan. [13]. This research is assisted by two coach collaborator partners whom acts as observer, consultant and partner on formulating action plan related on various validities above.

Achievement improvement indicator could be identified into two dimensions and seven indicators. If the average improvement of parameter test has exceeded 90%, therefore parameter test done on subject/athlete long jump training program is deemed successful.

From its type, the data on this research consist of two types, such as: (1) qualitative data, and (2) quantitative data. Coach as a researcher enact two functions at one, as a researcher and as a coach. As a researcher, the reliability of the research itself is deeply connected with research's result.[15] Clarity about the result which is previously anticipated and it is measured according to indicators which is previously stated is an integral part to obtain reliable result. Moreover, readers must be convinced through presentment of original data such as, field note, video recording and details of the process on sustainable cycle.

3. Calculation Result and Data Analysis

Intervention process is an application process of parameter test on long jump training program as an effort to improve Doni Susanto's long jump achievement on National Training (Pelatnas) for SEA Games XXIII/2005 Philippines which consists of two cycle and ten actions, customised with 2 peaks periodization.

On the first cycle of phase 1 of this training program, includes five action phases, i.e.: (1) pre-observation (2) training program – general preparation 1, (3) training program – special preparation 1, (4) training program – competition period 1, and (5) transition period/conference period.

On the second cycle of phase which is integral to the main competition, continuing the first cycle, it consists of 5 (five) action phases, i.e.: (6) transition period, (7) training program – general preparation 2, (8) training program – special preparation 2, (9) training program – main competition period, and (10) transition period/portfolio conference 2. The application of parameter test of long jump training program cycle I and II follows research action which is: (1) preliminary observation/pre-observation; (2) action plan; (3) action; (4) observation; (5) reflection; (6) validation and interpretation; and (7) follow-up.

3.1. Reflection of Cycle I and II

3.1.1. 3.1.1 Result of Physical Bio-motor Parameter on Cycle I and II. Average result of physical bio-motor parameter which consists of, average velocity bio-meter and strength bio-motor. As for the average of velocity and strength bio-motor during cycle 1 and 2 could be seen below.
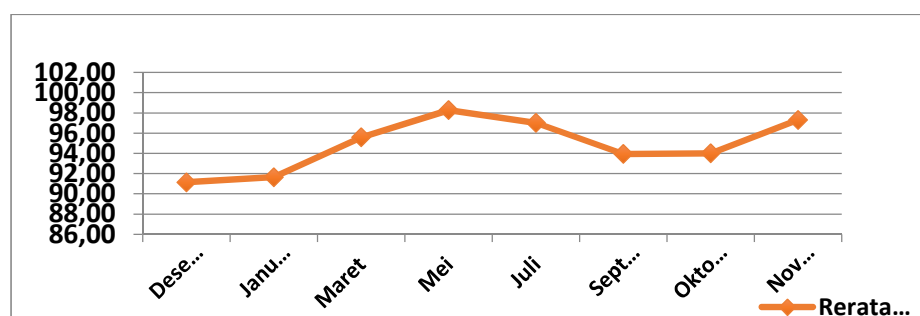

Figure 1. Average Velocity Bio-meter Parameter during Cycle I and II

Figure 1 shows average result of velocity bio-motor training as an impact of parameter test application on long jump program training, which proves that by giving said action has improved physical bio-motor parameter especially on velocity and consistent with expected periodization. This velocity parameter allegedly would become main parameter for long jump achievement result. [8] [16] [17]

Meanwhile, the average result of strength bio-motor parameter could be seen on Figure 2 below.
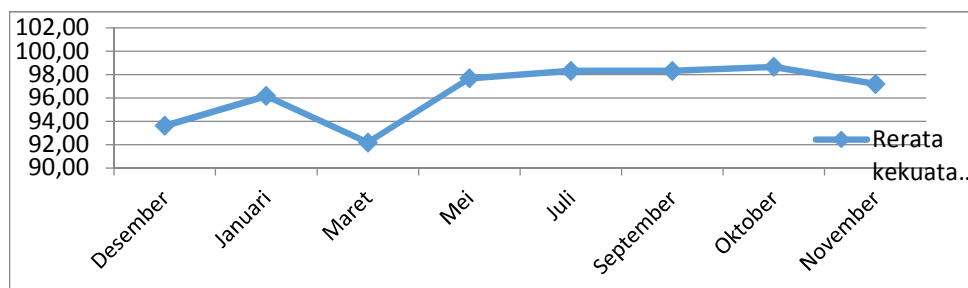
Figure 2. Average Strength Bio-meter Parameter during Cycle I and II

On Picture 2 shows average result of physical bio-motor especially strength bio-motor. By giving an action which is an application of strength parameter on long jump training program which is consistent with applied training periodization, by doing parameter test at the end of every mesocycle of coach training. Coach even athletes can continuously control program result in every meso-training. It's proven by meso 9-10, could be seen that the result of strength bio-motor training declines but such issue could immediately get solved so that on the next meso, the target could be reached. Strength bio-motor parameter is also an important parameter towards the achievement of long jump result aside from velocity bio-motor parameter. Strength parameter is highly correlated to long jump event [18] [19] [20], especially st. broad jump which the correlation point is quite high, 0.792 -0.840, as stated in his book Kusnezow, Petrowsky & Schustin [21]

3.1.2. Result of Long Jump Skill Parameter on Cycle I and II. Average percentage of the result of the improvement on long jump skill by subject/athlete on cycle I and II, compared to the observation of the observer could be seen on figure 3 below.
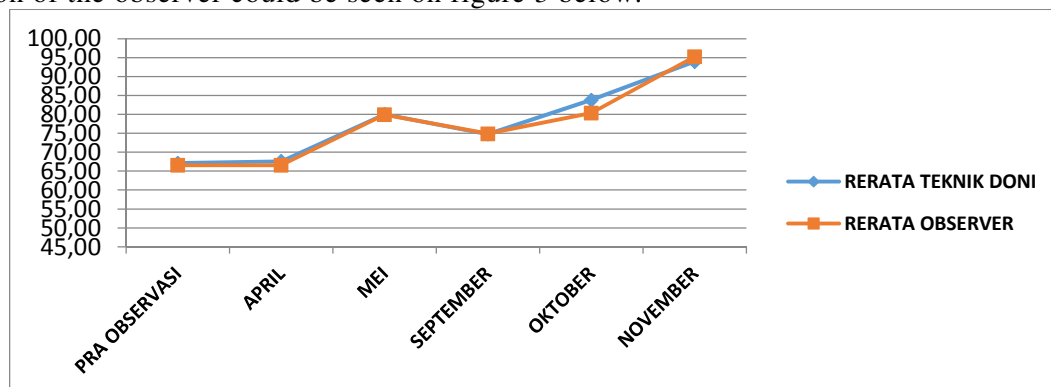

Figure 3. Result of Long Jump Skill Parameter on Cycle I and II.

Average of long jump skill parameter is a result of both athlete's and observer's observation. The result shows that athletes has understood cognitively about the mastery of long jump skill. Quantitatively, the average test result on long jump training program planning during cycle I and II, includes:
- Achievement of both physical parameters, velocity and strength has been achieved up to an average 97.46% which is in an excellent category.
- Achievement of long jump skill parameter appraisal by subject/athlete (Doni Susanto) is on average 80.02%, meanwhile appraisal by collaborators is on average 79.95%. Achievement of long jump skill appraised by either athlete or collaborator is

only on medium level.

As conclusion, average result of data based on quantitative parameter has achieved an increase above 90% (excellent). Even though the data is based on qualitative data, it can be concluded that parameter incline to improve better than three dimension of physical parameters except strength parameter. Qualitatively, its' improvement could not be observed well, remembering subject/athlete could not give proper response towards his own achievement because he's not used to give an appraisal narratively. Long jump skill parameter has improved for the better after subject/athlete is 'forced' to give himself an appraisal, and subject's response toward his own ability to self-reflect in terms of his long jump skill, improves.

   This means that efforts that has been done in this research such as the application of parameter test on long jump training gives visible impact, i.e.: 1) Exists the tendency of increase in a positive average result, which is reflected by the results of the parameter test as the basis for training program 2) Alongside the increase in the result of parameter test, long jump result achievement also, the first peak of achievement happens on Athletics national championship (kejurnas) 2005 with the result of 7.20 meters compared to previously set target which is 7.10 – 7.25 meter.

   Average increase of parameter test as stated above tend to improve in line with athlete's achievement on his long jump. Only on SEA Games XXIII/ 2005 in Philippines, athlete only achieve 7.20 meter compared to previously set target 7.25 – 7.25 meter. Even though said achievement is not athlete's best record, previously on Thailand Open try out in November 2005, his personal best is at 7.42 meter. But, the most important part is not on his jump record only, but there has been a better change from athlete's affective side. Subject-Doni S as a junior athlete has proved himself that his achievement on the scale of SEA Games in Philippines is the beginning step for the future of this athlete in his adolescent year (17 years old), which in previous SEA Games his best record is only below 7 meter.

3.1.3. Reflection of Training Target and Long Jump Achievement of Subject – Doni S on Cycle I and II The result of physical bio-meter parameter (strength and velocity) parameter biomotor fisik (kecepatan dan kekuatan), long jump skill parameter, also long jump achievement is portrayed in a full illustration below on figure 4.
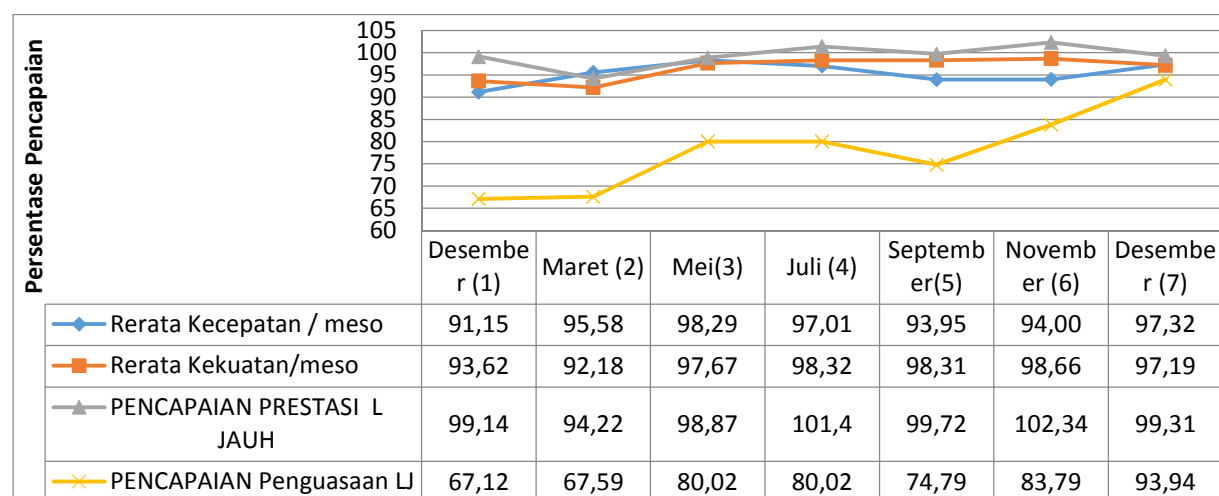

	Desember (1)	Maret (2)	Mei(3)	Juli (4)	September(5)	November (6)	Desember (7)
Rerata Kecepatan / meso	91,15	95,58	98,29	97,01	93,95	94,00	97,32
Rerata Kekuatan/meso	93,62	92,18	97,67	98,32	98,31	98,66	97,19
PENCAPAIAN PRESTASI L JAUH	99,14	94,22	98,87	101,4	99,72	102,34	99,31
PENCAPAIAN Penguasaan LJ	67,12	67,59	80,02	80,02	74,79	83,79	93,94

Figure 4. Parameter Target and Long Jump Achievement of Athlete during the Preparation of SEA Games XXIII/2005**.**

Picture 4 shows training target and achievement of physical bio-motor, skill master with athlete's long jump achievement. All the line represents average strength training, velocity, long jump achievement coincides each other, this shows that parameter test which is developed in this research has represent the prediction of long jump achievement by subject/athlete.

4. Conclusion

Based on findings and argument above, from this research, can be concluded 2 (two) things), which is:

1. Application of parameter test on long jump training program SEA Games XXIII/2005 has improved the achievement of the subject/athlete to 7.20 meters, in line with the average achievement which is more than 90%. This parameter test is used as an performance indicator for subject/athlete which consists of 2 dimension with 7 indicators, i.e.: (1) physical bio-motor parameter (velocity and strength), (2) long jump skill parameter. This is an indicator of analytical skills and knowledge of understanding, connecting and the application of logic to think in practical level.

2. The application of parameter test on long jump training program has improved subject/athlete's performance also improves his achievement for the better. Efforts to improve athlete's performance, needs several attempts to improve subject/athlete's autonomy, which is: a more comprehensive training program, routine reports which will trigger athlete's self-reflection and self-evaluation ability, also devising data collection instrument (parameter test) which is simple and applicable on field.

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