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# Preparation of a Measure of Kinetic Analysis using Artificial Intelligence Methods for Volleyball Coaches

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**Abstract:** Coaches need tocodify, modern and fast determine their ability to quantitative analysis using modern techniques to improve the performance and scalability while conducting education and training through the use of analytical skills Biomechanics modern techniques with coaches some sports selected, as the researcher used the descriptive style screening for suitability and nature of the research, random sample folk 200 coach experience of over 10 years training and tools of data collection are to analyze the references and previous studies, form Poil experts and the most important results that can apply to parameter the time, not to exceed15minutes and that the parameter can a tool had to evaluation and classification of the trainers and the most important recommendations to use a category analysis Biomechanics skills with modern techniques has trained as a tool to assess and classify trainers and find out their needs too whenthey're rehabilitation.

**Keywords: Kinetic Analysis, Volleyball Coaches, Artificial Intelligence**

## I. INTRODUCTION

Invaded modern technology various walks of life were necessary to reach the sports field to live up levels and help the player and coach on bringing out the best of their abilities normal human through improving training methods, arbitration and also in the manufacture of utilities for Training. The analysis Biomechanics results from information, knowledge, and concepts gained by the analyst, whether a teacher or coach during preparing academic and refined during field training and practice the profession, so we must be aware first that there is no final borders stop then and say here we can conduct the analysis ideally finished data but we must cultivate our ability to analysis through literacy theories and related sciences to study human motion (mechanics vital learning kinesthetic knowledge growth Education) and put them on the importance and one looking at performance and should take a neutral position them all so you can and one or more of those sciences that attracts performance under analysis the like explains the context is closer to the aim. The scientific knowledge and the independence of research results are applicable play an important role and essential in the design and production of hardware and mathematical tools and innovative search for the best and most suitable raw materials and work to improve the conditions of performance sports to achieve the best sporting achievements with the economy in the energy and effort and time. And determined the player to the upper levels by several factors the most important of coach sports, with associated access to those levels to the ability of the coach to manage the training process, any planning and organization of the training process and the ability to care and guidance and counseling team sports and thus can coaching in terms of that the commander of the technical management process for the team or players in professional sports. We can expect tremendous development in the information technology and personal computers will become cheaper, smaller and more accurate means all symptoms besides the availability of databases instant containing a large amount of information in all such purchases after the completion of transactions in banks, reservation for after all the requirements of life will be remote and will use human communication systems because they use computers everywhere in the house and the car and the university and the workplace and the club and public buildings. If the computer is important to our lives future where we need in schools to organize the educational process and the organization of the teaching process in factories and companies in the ministries and different bodies so the athletes when they need it, where we can use it to store information sports and retrieval as needed in the ways of modern training and that can determine business training inhalers using computers and take advantage also of the standard equipment for determining physiological variables before, during and after physical activity, and analysis of the. motor performance of the players, as. it is. known that the analysis equipment Biomechanics now become equipped with

cameras from different angles and with a modern computer. And that most of the research in the field of biomechanics relies solely on sophisticated computers and it thus became necessary to obtain the most accurate results for users. trainer sports are the essential foundation to do the planning and organizing steps Applied training process and directing players during competitions and end sports training operations and its success depends mainly on the availability of properties and attributes and capabilities, knowledge and skills specific to the coach. Coaches and teachers often need to be a logical analysis of the movements so that they can choose the most appropriate means and methods of education and training, to achieve building has this analysis of a study of the variables that explain the performance in the light of experience and knowledge and information. The requirement of modern technology in the field of modern training is to be able to coach sports to take full advantage of advanced technology in both training devices or technological devices. Which can be used directly in the process of training to upgrade the capabilities of the player's high levels, so he had to keep all developments era and to develop cognitive abilities and gets scientific courses eligible and where the modern technology in the field of sports training variable between day and night, so shall coach, consider the following:

- Attention to educate themselves and participate in the qualifying sessions for the operation of modern devices using the computer as well as identify recent modern techniques in the field of telecommunications
- Paying attention to sports federations and Olympic Committee organized a qualifying session which enables the coach to identify all that is new in the world of training and in the field of physical parameters and functional efficiency and psychological area, similar to what happens in the world
- The need to educate coaches and private coaches' high levels and national teams to get to know what's new in the world of computer and training in the use of network information(Internet) to familiarize themselves with all that is new in the world

Where developed countries are racing to use new technologies and adapt them in the field of training to train more quality to meet the challenges that occur in international sports events and access to advanced centers in the world championships and the Olympics. The mechanical foundations of motor performance is an important element that must take coach in the context of an integrated system planning process to make the training program more effective and more successful Through observations in the field of educational training was noted that a large number of workers in this field do not use these techniques despite its importance, especially after it was known that traditional training methods do not meet the needs of training and do not achieve the desired objectives. And determined the research problem in being an attempt scientific aims to build a parameter of analytical skills Biomechanics quantitative using modern techniques with coaches some sports selected because the belief that the analysis Biomechanics quantitative cost expensive with this saying is at stake after that made computers and spread, making it within the reach of a large segment of individuals and spread with different applications on the computer, including analysis software Biomechanics also believe that this analysis is not only to elite athletes with high performance and this statement also became under study because we are directing novice from the beginning to the sport specific without exercise novice different types of sports and specific operations selection scientific type sports practice the more the level of performance at least the number of errors in the performance and errors by the freshmen be clear and large and easy discovery Yet progress performance amounts to less errors and become difficult observation and discovery and it is necessary to use quantitative analysis Biomechanics with high levels in order to help in the discovery of these errors with the difficulties of belief and first reported in this section researcher recalled that with technological advances I said costs in terms of the spread of laptops (Laptop) and many users. And appeared on the International Network for Information (Internet) analysis software Biomechanics diverse and sometimes free and the spread of digital cameras reduced material cost remains the coach has to deal with these developments trendy that occurred and saves time and effort and be done on a scientific basis, which invited the researcher to build category aims to parameter analysis Biomechanics skills trained in modern techniques in selected sports

*Aims*

The research aims to build a Parameter of analysis Biomechanics skills with modern techniques for coaches.

## II. MATERIALS AND METHODS

*Approach*

The researcher used the descriptive method acting in the survey appropriateness and nature of the research.
Evidenced by the Table 1 that the approval rate experts on the Parameter category (category analysis skills Biomechanics modern techniques) ranged from 40% to 100% has been embraced researcher approval rate 70% on that is disposed category economy and thus the number of categories 5 after Display the experts and be category are (preparation and processing note technical analysis evaluation procedures interference (instructed)).

*Preparation of Parameter Phrases*

After selecting the Parameter category, the researcher develop phrases for each category Parameter has been introduced in the initial image experts have been making some adjustments.

*Statement Parameter Phrases*

Evidenced by Table 2 that the total number of phrases category before disposal (64) words were excluded 7 is the lack of access to 70% of the opinions of experts and the total number of parameter phrases 57.

*Reconnaissance Study*

Scoping study is made to the following:

1- What appropriate formulation phrases
Was sure of that by showing the category on coaches
2- Determine the time category:
Time for the application ranged between category (10-15) minutes
3- Get practical difficulties application
Been identified difficulties of application of what the target of the parameter as a tool to help coach before hosted than resulting from the application of all copies of the meter and reached 200 copies
4- Calculation of moderation of distribution of phrases

**Table 1:** Percentage of expert opinions analysis Biomechanics skills with modern techniques in the appropriate skills (category)(n=20)

| | Skill (category) | Agree | Non agree | Percentage agreement experts' opinions |
|---|---|---|---|---|
| 1 | Note | 18 | 2 | 90% |
| 2 | Preparation and processing | 16 | 4 | 80% |
| 3 | Technical analysis procedures | 20 | - | 100% |
| 4 | Rating | 14 | 6 | 70% |
| 5 | Intervention (instructed) | 16 | 4 | 80% |
| 6 | Contact | 8 | 12 | 40% |

**Table 2:** Statement in expressive terms for each of the parameter category of some sports coaches selected

| Category accepted | Initial phrases | Phrases excluded | Phrases |
|---|---|---|---|
| Preparation and processing | 15 | 2 | 13 |
| Note | 9 | 3 | 6 |
| Technical analysis procedures | 14 | 5 | 9 |
| Rating | 11 | - | 11 |
| Intervention (instructed) | 11 | 1 | 10 |
| Total | 60 | 11 | 49 |

**Table 3:** Moderation distribution account statements parameter

| No. phrase | Skewness Skewness | No. phrase | Skewness | No. | phrase |
|---|---|---|---|---|---|
| 1 | -0.395 | 21 | -0.440 | 41 | -0.965 |
| 2 | -0.254 | 22 | 0.055 | 42 | -0.518 |
| 3 | 0.243 | 23 | 0.727 | 43 | -0.672 |
| 4 | -1.663 | 24 | -0.816 | 44 | -0.417 |
| 5 | -0.647 | 25 | -0.948 | 45 | -0.874 |
| 6 | -0.262 | 26 | -0.586 | 46 | -0.901 |
| 7 | -0.632 | 27 | -0.573 | 47 | -1.033 |
| 8 | -0.415 | 28 | 0.418 | 48 | 0.926 |
| 9 | -0.404 | 29 | -0.406 | 49 | 0.955 |
| 10 | -0.764 | 30 | -0.792 | 50 | 1.962 |
| 11 | -0.440 | 31 | -0.743 | 51 | 0.967 |
| 12 | -0.053 | 32 | -1.051 | 52 | 1.574 |
| 13 | -0.728 | 33 | -0.724 | 53 | 1.928 |
| 14 | -0.811 | 34 | -0.871 | 54 | 1.829 |
| 15 | 0.652 | 35 | -1.648 | 55 | 1.761 |
| 16 | 0.486 | 36 | -0.591 | 56 | -0.655 |
| 17 | -0.571 | 37 | -0.446 | 57 | 0.515 |
| 18 | -0.464 | 38 | -0.055 | 58 | -0.441 |
| 19 | -0.408 | 39 | -0.782 | 59 | -0.448 |
| 20 | -0.791 | 40 | -0.243 | 60 | -0.906 |

Evidenced by Table 3 that the Skewness factor between (±3) This means that the all-phrases parameter suitable sample.

5- Scientific transactions of the parameter:
First: Validity
A - arbitrators ValidityB - self Validity

The researcher finding transactions validity and reliability of the parameter through the application of the parameter in its final form on (25) coach of the non-core sample and then re-apply it again to extract reliability coefficient was first application was the second application and the use Researcher Validity arbitrators where ten academic experts according to the conditions of experts was presented parameter them in its principled considering observation has been making some amendments were presented parameter them again to calculate the coefficient of honesty on the parameter The results showed that all the phrases in the parameter may achieve high transactions ratified by certified internal consistency coefficientcorrelation between the degree of each phrase separately and the total score of the parameter and the rationing sample (sample reconnaissance).

*A - Validity Arbitrators*

Evidenced by Table 4 that the proportion of the views of the arbitrators on the occasion of the parameter for the purpose for which it was put 92%.

*B- Self Validity*

Self-Validity by the square root of the reliability coefficient and described the parameter 11 and ranged from 0.735 to 0.929, a function of 0.05.

C - the internal consistency Validity:

Evidenced by Table 5 that all phrases statistically significant when linked with the total category and the total parameter at the 0.05 level (0.166).

*Second: Reliability*

A - Reliability account Test-Retest period of 15 days from the first application.

Evidenced by Table 6 that the correlation coefficient of the main category parameter and ranged from 0.735 to 0.929, a function at the level of 0.05

B - the expense of Reliability

A factor Alpha Cronbach way where coefficient has AlphaCronbach category

**Table 4:** Wanted arbitrators in the appropriate parameter for the purpose for which it was put (n = 20)

| Statement | Inappropriate Well suited (5 marks) | Somewhat (3 degrees) | appropriate (1 degree) |
|---|---|---|---|
| Number of views arbitrators | 16 | 4 | - |
| Total | 46 | | |
| Percentage | 92% | | |

**Table 5:**Correlation coefficient between total phrases and total category and the total parameter

| No. phrase first category | Consistency with the fourth category | Consistency with the category | No. phrase | Consistency with the total category | Consistency with the total category | No. phrase second category | Consistency with the category | Consistency with the total category | No. phrase Third category | Consistency with the category | Consistency with the total category | No. phrase | Consistency with the total category |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.973 | 0.954 | 1 | 0.863 | 0.844 | 1 | 0.868 | 0.844 | 1 | 0.747 | 0.748 | 1 | 0.721 |
| | 0.729 | | | | | | | | | | | | |
| 2 | 0.848 | 0.827 | 2 | 0.742 | 0.746 | 2 | 0.751 | 0.746 | 2 | 0.829 | 0.826 | 2 | 0.819 |
| | 0.726 | | | | | | | | | | | | |
| 3 | 0.895 | 0.896 | 3 | 0.836 | 0.822 | 3 | 0.845 | 0.828 | 3 | 0.864 | 0.864 | 3 | 0.850 |
| | 0.867 | | | | | | | | | | | | |
| 4 | 0.906 | 0.707 | 4 | 0.867 | 0.869 | 4 | 0.861 | 0.862 | 4 | 0.875 | 0.875 | 4 | 0.892 |
| | 0.875 | | | | | | | | | | | | |
| 5 | 0.903 | 0.893 | 5 | 0.875 | 0.876 | 5 | 0.874 | 0.877 | 5 | 0.832 | 0.836 | 5 | 0.854 |
| | 0.830 | | | | | | | | | | | | |
| 6 | 0.862 | 0.866 | 6 | 0.826 | 0.837 | 6 | 0.825 | 0.830 | 6 | 0.862 | 0.786 | 6 | 0.881 |
| | 0.885 | | | | | | | | | | | | |
| 7 | 0.902 | 0.900 | 7 | 0.862 | 0.876 | 7 | 0.878 | 0.875 | 7 | 0.831 | 0.751 | 7 | 0.826 |
| | 0.814 | | | | | | | | | | | | |
| 8 | 0.855 | 0.856 | 8 | 0.828 | 0.820 | 8 | 0.806 | 0.823 | 8 | 0.799 | 0.785 | 8 | 0.788 |
| | 0.785 | | | | | | | | | | | | |
| 9 | 0.8265 | 0.670 | 9 | 0.782 | 0.704 | 9 | 0.764 | 0.786 | 9 | 0.915 | 0.679 | 9 | 0.894 |
| | 0.919 | | | | | | | | | | | | |
| | | | 10 | 0.926 | 0.914 | 10 | 0.912 | 0.914 | | | | 10 | 0.745 |
| | 0.747 | | | | | | | | | | | | |
| | | | | | | 11 | 0.728 | 0.848 | | | | 11 | 0.676 |
| | 0.675 | | | | | | | | | | | | |
| | | | | | | 12 | 0.614 | 0.726 | | | | 12 | 0.651 |
| | 0.966 | | | | | | | | | | | | |
| | | | | | | 13 | 0.722 | 0.614 | | | | | |
| | | | | | | 14 | 0.619 | 0.721 | | | | | |
| | | | | | | 15 | 0.764 | 0.683 | | | | | |
| | | | | | | 16 | 0.664 | 0.762 | | | | | |
| | | | | | | 17 | 0.738 | 0.662 | | | | | |

**STable 6:** Correlation coefficients between the first and second application

| | | First application | | Second application | | | |
|---|---|---|---|---|---|---|---|
| | Skill(category) | Mean | SD± | Mean | SD± | Value (R) | Self validity |
| 1 | Preparation and processing | 39 | 7.843 | 38 | 6.858 | 0.901 | 0.949 |
| 2 | Note | 41.680 | 8.124 | 42.670 | 7.955 | 0.929 | 0.933 |
| 3 | Technical analysis procedures | 71.55 | 13.641 | 73.490 | 13.069 | 0.885 | 0.930 |
| 4 | Rating | 37.570 | 7.116 | 41.020 | 6.910 | 0.735 | 0.849 |
| 5 | Intervention (instructed) | 52.320 | 9.540 | 54.130 | 8.810 | 0.775 | 0.857 |

**Table 7:** Reliability Form questionnaire in Alpha Cronbach manner

| Category | Alpha | Mean | SD ± | |
|---|---|---|---|---|
| Preparation and processing | 0.966 | 38.11 | 7.662 | |
| Note | 0.964 | 41.980 | 8.188 | |
| Technical analysis procedures | 0.983 | 72.250 | 13.631 | |
| Rating | 0.968 | 38.640 | 7.376 | |
| Intervention (instructed) | 0.961 | 51.930 | 9.550 | |
| Total | 0.972 | | | |

Clear from Table 7 that the value of alpha 0.972 showing Reliability highly questionnaire.

*Statistical Treatments*

All statistical treatments of the data have been carried out using computer packages of statistical programs where SPSS Statistical analysesincluded arithmetic mean, standard deviation, Skewness, Alpha Cronbach, correlation coefficient, percentage, Coefficient of variation.

## III. RESULTS AND DISCUSSION

Clear from Tables 1 to 7, the parameter became completed and that honest and consistent in the outcome's light of the results and according to expert opinions in Table 1.And so that category preparation and processing, the percentage of agreement expert opinions 70% and the category of observation was by the consent of experts by 90% The category analysis procedures technical was the consensus of experts' attic 100% and then comes after a centerpiece of the assessment rate expert's attic 70% and then the category of intervention, which was approved by experts 80%

The skill preparation and processing got 70% of the approval rate experts because it the starting point, which begins its analysis Biomechanics then the skill of observation and got 90% due high note of the diversity of use as a tool of data collection with a variety intended to have in the assessment tool or infinite repetition of skills (Khater, 1985; Ala Elddin, 2007; Awad Mohammed, 1991; Michael, 1987; Morse, 1988; Burstein, 1988; Hay, 1985). Then skilled technical procedures for analysis due to its importance in the precise stages of movement and application characteristics, allowing the development of performance. Then came the focus and skill evaluation and then the center of intervention (direct instructions) This is a logical parameter would have to come after the end of the assessment and stand on the weaknesses performance and intended use of nutrition retro apostate (Salem, 1990; Laurak, 1989). About skill or category of communication does not mean not achieve the required percentage to totally indispensable because it is implicitly traffic especially when you make a note (Husam Eldin *et al*., 2006; Knudson, 1997; 2002). As can be seen from Table 3 The torsion coefficient ranged between (+3)

and this means that the all-phrases formula suitable sample due to the procedures followed in Tables 3-7 and the relative importance of phrases axes parameter.
As is clear from Table 4 that ratified the arbitrators reached 92%. As shown in Table 5 self-honesty through the square root of reliability coefficient, a D at 0.05 As shown in Table 6 come standard fixed in a test application and reapply 15 days from the first application where the correlation coefficient for the category parameter ranging from 0.735-0.929.As shown in Table 7 account Reliability Alpha Cronbach coefficient shows the degree of Reliability of the category where the total number of standard phrases 57. By 9 phrases to the category of preparation and motivation 10 statements to the category of observation and 17 words to of the category technical procedures for analysis and 9 phrases to focus assessment and 12 words to the category of intervention (Instructed).

## IV. CONCLUSION

The Researcher Concludes the Following:
1- Subordination standard for transactions of scientific validity and reliability can be used as a tool had to evaluate and classification of trainers generally
2- Can be applied to measure the period between 10-15 min
3- Can be measured kinetic analysis techniques with modern sports coaches selected through skills (note - kinetic analysis - Calendar - therapeutic intervention)

## V. RECOMMENDATION

The researcher recommends the following:

1- Attention kinetic analysis with modern techniques within the decisions of the study physical education faculties and training courses and refinement of the selected sports coaches
2- Building scale kinetic analysis skills with modern techniques of sports coaches selected as a tool to assess and classify the teacher and find out their needs to be taken into account when rehabilitation

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