

A CASE STUDY OF THE SELECTED PROMINENT JUMPERS  
---ON THEIR CONCEPTS OF SPECIFIC MOTION AND TRAINING---

YUKITO MURAKI  
Institute of Sports Science,  
The University of Tsukuba

A CASE STUDY OF THE SELECTED PROMINENT JUMPERS

—On Their Concepts of Specific Motions and Training—

Printed in October 1, 1977

Author: Yukito MURAKI ©

Institute of Sports Science,  
The University of Tsukuba  
Sakura-mura, Niihari-gun  
Ibaraki 300-31, JAPAN  
TEL (0298) 53-2630

# A CASE STUDY OF THE SELECTED PROMINENT JUMPERS ---ON THEIR CONCEPTS OF SPECIFIC MOTION AND TRAINING---

YUKITO MURAKI

Institute of Sports Science,  
The University of Tsukuba

## INTRODUCTION

The central learning process of athletics seems to be motion experience, which ultimately must be gained by the athlete entirely by himself. However, it is now possible greatly to cut short and simplify the learning process as a result of more accurate description and explanation of sequential motion in sports which gives a better understanding of its true nature. Therefore, it may be both interesting and valuable to record some informal analyses of the motion process as viewed by prominent and seasoned world athletes.

The purpose of this survey is to take note of some of the techniques and concepts of training which were created and constantly improved through great effort and dedication by athletes and coaches over many years--personal, subjective observations by successful performers, apart from more scientific investigation in the same field.

Through the last half of this century there has been remarkable progress in track and field athletics, especially in the jumping events. We admit that a large part of these contributions have resulted from improvements in equipment and scientific sports research. But we believe that it is the earnest challenge to the records now held which is the real incentive to progress in this athletic world. Here the personal techniques and private conceptions of successful athletes may be of real interest and value to those aspiring challengers.

This survey focussed on the jumping events of track and field athletics: The long jump, triple jump, pole vault and high jump.

## MATERIALS AND METHODS

A debriefing method was employed to collect data on how experienced jumpers understand and execute specific motions in their concepts of training.

The first series of the survey was made in 1974-75 by using the first form of the questionnaire. The name of the selected jumper was drawn from world lists published in the Track and Field News of the USA and the Leichtathletik of the West Germany between 1970 and 1973. A total of 22 nations and 172 jumpers were listed; addresses of these jumpers were obtained from their respective track and field federations with the kind assistance of the Japan Amateur Athletic Federation. The questionnaires were then mailed to each jumper and a total of 23 athletes from eight different countries responded. In this list were included six former or present world record holders in four events, and other top-ranking jumpers or national record holders( see table 1 and 2 ).

The second series of the survey was made in 1976 and used the newly-revised questionnaire, given mainly to Russian jumpers on the occasion when I was invited by the Russian Sports Committee to join their training camp at the Main Olympic Training Base at Tsahkadzor in Armenia during March 11 to March 26, 1976. Participants in the training camp were national candidates to the Montreal Olympic Games. Some of the answers to the second survey were given by non-participants, however, through a friend of mine, and obtained on other days. A total of 29

jumpers( one an American and one a Czechoslovakian ) gave me answers to the revised questionnaire. Some of them were former world record holders; most of them were Russian record holders, Sport-Masters or Candidates for Sport-Master( see also table 1 and 2 ).

The questionnaire was divided into three major sections as follows:

- 1) Concerning the approach run and take-off. It may be agreed by most experienced jumpers that in a very practical sense at least 90% of the result of the jump will be determined by the approach run. In other words, mechanically speaking, the most critical task for the jumper is to move their bodies through the approach run to enable them to get into the correct position with maximum velocity at the take-off stage. If the approach is proper the jumper is able to make a perfect take-off movement leading to a good performance. The four jumping events have common fundamental mechanical characteristics: That is, that the direction of the horizontal momentum must be shifted to upward and forward, and that the jumping motion must be an extension of the sprinting motion. Every element of each motion should join together in the coordinated organic continuity that is the successful jump. Overwhelmingly a good jump is the product of a good approach run. The first part of the questionnaire concentrated on the kind and quality of motion in this phase.
- 2) Concerning the motion technique and the training method. ( This was covered mainly in the revised form of the questionnaire in the second survey. ) We know that the motion technique and "cue" will be very difficult to explain or represent in normal language since we are considering a total process of motion having organic unity. But we also know that a verbal-explanation may be very helpful in increasing the athlete's comprehension of his own performance. Comparison of analyses by various athletes of the same motion may well increase our understanding of it. It is important for both jumpers and coaches to first make an analysis in their own language of their motion technique and then to devise a clear and reasonable method for others to master it.
- 3) Concerning the training program and competition. It is necessary to develop a rational year-round training program which will enable the athlete to arrive at the peak of training at the most suitable time---called "Periodization of sports training" by Professor L. P. Matveev of the Soviet Union. Following his concept, this survey raised questions concerning the periodization of the training year and the typical weekly training program( microcycle ) representing each training stage( mezzo- and macrocycle ). The competition itself is of course a key stone in the motivation of athletes to achieve the best in the training program.<sup>4)---9)</sup>
- 4) Other comments. In addition to the second survey, firstly, comments were invited on their specific developmental processes and injuries. And for both surveys comments were invited on the future of modern jumping and the problems of young jumpers.

Regarding the answers: Since the original and the revised forms of the questionnaire were somewhat different it is not possible to compare all answers. In order to consolidate both surveys the order of the answers was rearranged with questions related with their athletic careers given first, then questions divided into three major sections as afore said; the order of events was from long jumpers to triple jumpers to pole vaulters to high jumpers, and the answers of the first survey were put first then the answers of the second survey next in each event. Index code for each jumper( i.e., L1, LL1, T1, TT1, P1, PP1, H1 ) were in collations on table 1.

In compiling answers to each item, the unique ideas and expressions of each athlete used explain their conceptions of movements and training methods were preserved as much as possible. The answers of one of the subjects( SANEEV, V.: code TT6 ) were not directly made by himself, but indirectly made by his coach, KREER, V.. And some parts of answers of SCHELVANOVA, T.( code LL5 ) were made by herself cooperated with her coach in past, Professor A. I. KUZNETSOV.

## SUMMARIES OF ANSWERS TO QUESTIONS

1. What was the major reason for you to get remarkable progresses in your career as you described above? Was it mainly caused by the technical progress, physical development and/or rationalizing the training programme? ( See table 3 and 4.)

LL1-Perfection of the technique.

LL2-It's depended on such "will" as to be a top of the world in the long jump.

LL3-It's depended on both of the development of the physical fitness and the perfection of the technique.

LL4-It's depended on above all three factors; 1)Physical development, 2)Technical perfection, and 3)Rationalization of the training programme.

LL5-I think that these three factors above all are affecting.

LL6-It's depended on the development of the muscular strength and speed. And at the same time, it's impossible to achieve any good performances if a jumper has a poor technique on jumping.

LL7-It's depended on both of the physical development and the rationalization of the training programme.

TT1-Physical development.

TT2-Physical development.

TT3-No answer.

TT4-I can say that the physical development mainly have given the progress of my performance, but also causing the perfection of my technique based on the newly developed factor of the physical fitness.

TT5-It's depended on the rationalization of the training programme.

TT6-No answer.

TT7-Depending on the physical development and the perfection of the technique.

TT8-Depending on the physical development.

TT9-Depending on the physical development and the progress on sprinting.

TT10-It's depended on above all three factors; 1)Physical development, 2)Technical perfection, and 3)Rationalization of the training programme.

TT11-1)Physical development, 2)Rationalization of the training programme, and 3)Perfection of the technique.

TT12-Depending on the physical development.

PP1-Depnding on the perfection of the technique and the physical development.

PP2-Depending on the physical development.

PP3-It's depended on the perfection of the technique plus physical development.

PP4-It seems to be depending on my attitude to keep on dedicating myself anytime to pursue my own possibility on jumping.

PP5-It's depended on the rationalization of the training programme.

PP6-It's depended on the perfection of the technique.

PP7-Depending on the perfection of the technique.

PP8-It's depending on the alternation of the material of the pole from steel to fiberglass in 1964.

PP9-No answer.

PP10-Until this year, I have been having excellent coaching. I have been able to develop myself technically rather than physically, depending on the opinions of my coaches. While they have been always insisting on good running. And, I believe that this has been most important.

2. Have you ever had a sports injury in your career? What kind of injury, when did you get it, and how long did it take to get well? ( See Table 5.)

LL1-Muscle strain of the thigh in 1920, 1921, 1922, 1923, 1924, and 1925. It took almost 2-4 weeks in each time, caused on less muscular strength.

LL2-1)Muscle strain of the superficial posterior femoral muscles in 1973 and

1975, caused on over-stretching. 2)Hydrops of the right knee joint, caused on over-extension. 3)Neuralgia at the saclar region on my back in 1973, and still be keeping. The reasons were unknown.

LL3-No injury.

LL4-1)Sprain-fracture of the left lateral malleolus of fibula in 1971 by accident, and it took a year to get well. 2)Tearing 1/3 of the lateral ligament of the left ankle at the same time.

LL5-No injury.

LL6-1)Muscle strain of the biceps femoris in June 1966, caused on the lack of warm-up and it took almost 20 days. 2)Sprain the ankle in April 1975 caused on carelessness while in the training on the un-flatted surface. It took about 15 days.

LL7-1)Muscle strain of the posterior femoral muscles in 1975 caused on an insufficient warm-up and the high intensity of the competition loard. It took about one and half month. 2)Same as above in 1975 caused on the same reason, and it took about a month.

TT1-No injury.

TT2-Over-strain a knee ligament of the lead leg in March 13, 1973 caused on an over loard, and it took about eight months.

TT3-1)Sprain the ankle by accident about 2-3 times in a year and it took about one and half month. 2)Muscle strain of the posterior femoral muscles for about 1-2 times caused on a lack of massage. It took about a month.

TT4-Neuralgia of the left sciatic nerve, from August 31 to October 25 caused on too much cooling-off the body.

TT5-1)Achilles peritendonitis in 1975 and still be keeping the pain, because of an act of God. 2)Knee injury in 1972 and it took about three months.

TT6-Sprain the ankle joint in 1965 for two months, for 12 months in 1966, for one month in 1972, and for one and half month in 1975, because of chronic injury.

TT7-1)Muscle strain of the posterior femoral muscles in April 1975 for one month, because of over-loading. 2)Muscle strain of the intercostal muscle in January 1974 for one month to get well. 3)Sprain the ankle joint, repeatedly caused on a dislocation of the joint, and it took 3-4 days or one month in each time.

TT8-1)Muscle strain of the anterior tibial muscle in 1970, caused on the unflatted spot of the taking off and the lack of strength. It took about one month. 2)Muscle strain of the superficial posterior femoral muscle for one and half month in 1973, caused on a fatigue and a lock of vitamin.

TT9-1)Muscle strain of the left thigh and the posterior vertebral muscles for four months in June 1968, caused on an insufficient career for the competitions. 2)Muscle strain of the posterior vertebral muscles for three months in January 1969, caused on over training. 3)Muscle strain of the thigh for two months in September 1971, because of an accident. 4)Right knee injury for three months in June 1973, because of unknown reason.

TT11-1)Bruise of the heel( take-off foot ) for two and half months in 1966, caused on a bad technique to get an appropriate position at the take-off to shift the center of the body right on the take-off leg. 2)Bruise the opposit heel in 1967, and it was just same as above reason.

TT12-1)Injury on the sole of the foot for one year in 1968, while in an running approach. 2)Muscle pain on my back for three years since 1970, caused on rheumatism.

PP1-1)Dislocation of the knee joint for a month, because of a bad facility of the landing pit. 2)Neuralgia of the sciatic nerve for five months, because of cooling-off the body during the Off-season.

PP2-Sprain the foot and ankle once in 1966, twice in 1967, once in 1969, twice in 1970, once in 1971, and once in 1972, because of a bad landing motion into the pit while in vaulting.

- PP3-Muscle strain of the posterior femoral muscles for three months in 1970, because of disorder of the posture during the work.
- PP4-Muscle strain of the posterior femoral muscles for 25 days in 1960, because of disordering of the posture just before the taking off.
- PP5-Buddchiari disease, since October 1974 to June 1975.
- PP6-1)Muscle strain of the posterior femoral muscle for one year in 1966, because of un-trained physical condition. 2)Traumatic root sign for three years in 1971, because of a lack of muscle strength. 3)Lacerated wound of the left ankle for one year in 1969, because of a bad facility of the landing pit.
- PP7-No injury.
- PP8-1)Muscle strain of the left posterior femoral muscle for one and half month in 1962 caused on a difficulty of my training schedule. 2)Muscle strain of the left anterior femoral muscle for one and half month in 1962, caused on the same reason as afore said.
- PP9-No answer.
- PP10-1)Bruise the heel at the age of 14 for four weeks, because of a failure on the landing. 2)Bruise the back and muscle strain at the subinguinal region at the age of 16 for eight weeks, because of the bad facility of the landing pit. 3)Muscle strain of the triceps humeral muscle at the age of 19 for three weeks, while practicing the swing-pull work. 4)Muscle strain at the subinguinal region at the age of 20 for five weeks. 5)Sprain the ankle at the age of 21 for 14 weeks, because of the lack of the mental preparation toward the vaulting, and landing on the box. 6)Dislocation of the shoulder joint and muscle strain of the biceps humeral muscle at the age of 22 for eight weeks, caused on not enough strengthened.

3. How long do you use for your approach running in meters or foot of yours, and where do you have your check-marks? (See the table 6 for the answers and the table 7 for the statistics. )

4. What kind of style do you employ to start on your approach running? Please choose and encircle from the following items; 1)Standing on both foot, 2)Split style, 3)Stepping on the spot, and 4)Others--please explain the way. ( See the table 8 . )

5. Before the start, are you doing something to help your concentration and are you aware of it? Is it physical or mental? Please illustrate in figures if you need.

L1-No.

L2-I simply tell myself to try that jump further than anyone els in the competi-tion.

L3-Breathing rhythmically to the approach, and breath out with the first step of the approach.

L4-Yes, I do several things at the start that help concentration. Yes, I am very of them. Mental and Physical. Physically, rocking moves, heel, toe, movement rocking. Mentally, I think out the actual approach, take-off, flight, and landing several times. It takes 45sec. to do.

L5-Sometime I might stand on the balls or toes. But, lately I just stand on my starting point; rock back with my left leg and at the same time I raise my right arm upward and backward.

L6-Concentrate on relaxation--driving past the board, not slowing up for the board, boasting deep not worrying about failure.

L7-Before start very deep breathing and swaying on the both feet.

L8-Nothing.

LL1-I aware of it, only in my mind.

LL2-I aware of it. I used to concentrate myself to be able to execute correctly on some parts of the move which I could not do well.

LL3-I concentrate myself trying to tranquilize my mind.

LL4-Doing visualization about my running approach in my mind.

LL5-I do it only in my mind.

LL6-I concentrate my mind about the rhythm of my running approach.

LL7-I do it only in my mind.

T1-Yes, I concentrate myself, physically and mentally. This means that I think about the jump that I must do by moving on place, by jumping fit together on place, and also by being relax.

T2-No answer.

T3-Mental concentration by visualization of mechanical performance what efforts required to produce good jump.

T4-I sometimes walk backwards and forwards a couple of times about five meters.

T5-1)Taking off position= weight on left foot, 2)Now bending forward several times ( 5-10sec. ), 3)First step with right foot.

TT1-I used to make up in my mind about the way of running at the initial and the final stage of the running approach.

TT2-I do it only in my mind.

TT3-I do consciously to concentrate myself in my mind.

TT4-I aware of it. I am trying to think about my jumping at the initial stage of the approach running.

TT5-I used to try to concentrate myself physically that is to have a test running on the first half of my running approach, in fact which is about 4 or 5 running strides.

TT6-No answer.

TT7-I try to get a mental concentration.

TT8-I try to fix my eyes on one point for my concentration.

TT9-I try to visualize in my mind about my running approach, especially on its final stage and the whole process of the jump.

TT10-I aware of it only in my mind.

TT11-1)Trying to make an fast running approach. 2)Visualizing in my mind about my "jump".

TT12-I am thinking only about "Jump as far as I can".

P1-I always try to have the feeling that I easy will reach to the pit without any effort. Try to relax.

P2-When I am jumping well, I spend very little time at the end of the run-way( just enough to know I am mentally ready for the jump ).

P3-I am concentrating on the last six steps to perfect the tip of the pole in the box.

P4-I do nothing.

P5-I just try to concentrate on some delicate in my technique.

P6-Mental concentration; mental vision of the movement. Physical concentration; maximum de-contraction( relaxation ).

P7-Not really. I concentrate on my particular weakness at that time( current problems for me, etc. ).

PP1-Visualizing the rhythm of the move in my mind. And I used to do double footed jump on a spot about six to 10 times for about 30 sec. before starting my running approach.

PP2-I concentrate myself on the take-off box.

PP3-I used to try to make concentration to execute well about two, three, or four technical points.

PP4-I am trying to concentrate my mind on the most important factor of my jumping.

PP5-I am trying to image-up my jump and to let me bring it to perfection in mind.

PP6-I do it only in my mind.



PP7-Nothing to do.

PP8-I only think about a good start.

PP9-If a vaulter has an excellent technique, he had better to try to concentrate his mind on the rhythm of the whole jumping process. But, on the other hand, if he has not good technique, he should aware his mind about his technical weak-points. As waiting to get a beginning of the wave of excitement while standing at the starting point, he should have great pleasant of mind during the time.

PP10-It's depending on making up a mental image mainly in my mind. I used to try to get an concentration quickly, and try to concentrate to visualize myself to clear the bar in my vaulting.

H1-Concentrating on getting over the bar. Mentally, looking at each step before take-off.

H2-Concentrating on the take-off. I consider the best features of my technique are my quick take-off, and my fast arm action prior to and at the take-off.

H3-Completely mental. I'm emrnsioning myself executing perfect high jump mechanics.

6. How long do you take a time to concentrate yourself by the time of your start? ( Answers and the statistics were on the table 9 . )

7. How do you control or conduct the initial build-up( acceleration )?

Please choose and encircle a number from the follows:

1) Steep acceleration from the beginning with a slightly shortened stride to get maximum pitch almost sixth step from the start.

2) Easy acceleration, lengthenning the stride almost two meters in early stage, and building up the pitch gradually.

3) Mixed method with above two, building up the pitch and lengthenning the steide gradually.

4) Another method( Please explain. )

( See the table 10. for the answers to this question and the statistics. )

8. What are your cues( visual or otherwise ) for getting into the appropriate position toward the take-off? Please illustrate in figures if you need.

L1-No answer.

L2-There is a feeling that I have about three strides from the board; which tells me to react a certain way. I have trained so much until it's a normal thing.

L3-Look straight forward; not downward. Pelvis lift, shoulder girdle lift, higher the knee of the lead leg. Posture is at up-right; never forward nor backward.

L4-This act on my part come as a feeling. Know cues, vision involved. The feeling comes from my arm movement. To a on-looker, I appear to stop driving, more and more relaxation. Jump preparation it called mental and physical act.

L5-Don't have any.

L6-Concentrating on the end of the pit, and not hesitating for the board.

L7-By holding my head in upright position and looking tightly forward. And having a maximal acceleration during the last four steps.

L8-No answer.

LL1-I have not a knack particularly. It's very often to standstill or to fail.

It seems to be very difficult for me to get a stable kincking on the take-off board in anytime.

LL2-Always I am concerning to lift my lead leg forward and upward, and to move widely with a relaxation. I am also concerning on that I can make my take-off leg move fast and easy.

LL3-It is depending on my run-up rhythm.

LL4-The hurdle running is a knack of mine for that.

LL5-To fit the tempo of my running approach about six steps before the take-off.

LL6-I am concerning to move on an appropriate and even-rhythm and tempo in every jump. And that should come from stabilization of the running strides.

LL7-If you can make the initial three or four steps of the run-up stabilize, I can get the dynamic and stabilized taking off.

T1-Here is how is the repetition of my running approach. The first seven steps are big ample and dynamite. During the following four steps, I reach a medium speed and the last six steps accelerate even more, by still being well place, well relax, and prepared the jump.

T2-I have a view of my take-off position in my mind.

T3-Over last 20 meters quickening of leg speed in order to run over the surface of the board. I don't believe in the check-mark on the run-way, because I think they inhibit running speed to board. Accuracy of run-up depends of stride length.

T4-I automatically adjust my stride pattern if necessary approximately 10 meters from the take-off.

T5-1) Full sprint to the board, 2) No change of body position during the jump, if possible, 3) Lifting leg up to horizontal line, and 4) Maximum stretch of complete body( toes, feet, legs, and hips ).

TT1-I have no cue particularly. I used to have a lot of practices of variable jumps to prepare for the stabilized taking-off.

TT2-Hitting the ground hard with my legs and swinging arms powerfully.

TT3-It's placing a control mark at a point of 13.80m before the take-off spot to get it.

TT4-I am utilizing a control mark, and from there I used to try to build the running speed up to the maximum.

TT5-Placing a control mark at a point of 13.50m before the take-off spot.

TT6-No answer.

TT7-My take-off has not yet be stabilized. I have not particular cues.

TT8-I am trying to make my running stride stabilize at the initial stage.

TT9-I used to have many practices to get the cue, and which are the depth jumpings from various height to fit with my jumping rhythm.

TT10-Placing a control mark at a point of 13 meters before the take-off spot.

TT11-I am always concerning to get the most suitable running approach to get a good jump.

TT12-Concentrating my mind and my strength.

P1-I always try to lower the tip of the pole and trying to get the right hand to get up a little higher and forward at the hip.

P2-Try to run upright on toes and put the feet on the ground as quick as possible to avoid "floating" the last few steps. I keep eyes focused on the box. In the take-off driving action, I try to smoothly run-off the ground in a natural motion, and try to get a natural movement from take-off to rock back( a fluid swinging motion which should be continuous ).

After the take-off stage, we have a very important stage to the vaulting that is the pull and turn after the rock-back. This is an area which I feel many vaulters lose momentum---the secret is to pull while the pole is still unbending, rather than after it straightens. This "earlier" pulling motion tends to make the feet and hips drop, but with a conscious effort to resist gravity and keep the hips back. It will be enable the vaulter to get a greater fly-away. These problems caused on: 1) Improper swing( shortenning it or allowing the back leg to bend up rather than remaining straight ). 2) Poor plant( not straight-up, but with upper arm bent ). 3) Failure to gather ( unprepared to transform run into jump at the take-off ).

- P3-The question is not important. The position of the jumper at the start of his take-off course is very personal. I don't think that is position is important for the continuation of the jump.
- P4-I just run as fast as possible.
- P5-First of all, I need confidence in my jumping. Try to stay relaxed and run with my optimal speed right before the take-off. I lower the top of my pole half way down run-way to get the feeling of leading forward and driving and also of course to prepare the perfection.
- P6-My running approach is done this way; very fast steps( maximum speed ), relaxation and preparation on the jump on four steps.
- P7-Very difficult to answer, because it comes naturally. Try to maintain center of gravity as high as possible without changing cadence of run.
- PP1-This can be made only after doing a lot of pole running on the run-way.
- PP2-It's depending on the stability of running speed.
- PP3-It is to get an appropriate run-up rhythm after passing the control mark.
- PP4-It is my cue to have a control mark at 15 meters before the planting box of the pole.
- PP5-No answer.
- PP6-To get an dynamic stereo type of motion.
- PP7-It is very difficult to tell about my cue, because it is very personal.
- PP8-To get a feeling of run-up rhythm.
- PP9-Doing a lot of practices of approach running, I am always mentioning on an whole rhythm of my running approach. If there is an tendency of over lengthened at the final few steps, I used to place a piece of paper tape in front of the take-off spot, and then I try to mention not to touch it with my foot.
- PP10-My cue first involve the run. I have to think of accelerating at the box. Then, I must think of aggressively throwing the left arm( front arm ) forward to start the plant. If I do these properly I arrive a good position at the take-off.

H1-Concentration.

H2-Bar and standards( nearest standard ).

H3-None. At this point everything is feeling and distinct.

8-b. Do you have any model to make-up your image of your approach-running or sprinting or did you have such thing in past?

L1-I run high and foot is very active on the ground. The running approach; the chest is just more up, and more general relaxation.

L2-None.

L3-On the approach-running, higher the knee-lead.

L4-None.

L5-None.

L6-Igor Ter-Obanesian of the USSR.

L7-By having several approach-running with the very maximal effect.

L8-I do my running approach progresively, rhythmically to avoid as much as possible to break my rhythm. In order to reach in acceleration until the end of the running approach, and in being as high as possible on my support feet and to put as much as possible the herad, trunk, and the right hip( take-off leg's ) into one piece.

T1-Nobody.

T2-My approach running is slower.

T3-None.

T4-None.

T5-None.

P1-To get the heel up fast at your back and to get the knees high.  
P2-I think Issakson, Seagren, and Johnson run the best with the pole. I would like to have Issakson's cadence, Johnson's speed and incooperate the two into my style.  
P3-None.  
P4-None.  
P5-None.  
P6-None.  
P7-Run with good sprinting form---relaxed, high knees, etc.  
H1-None.  
H2-None.  
H3-None.

9. Are you aware the take off board or spot while you are in approaching?  
( See the table 11. )

LL1-No, I'm not aware it.  
LL2-Yes, I'm aware of it.  
LL3-Yes, I am.  
LL4-Yes, I'm aware of it.  
LL5-Yes, I'm aware of it, but I try to concentrate my attention especially on the significant point of my run-up technique.  
LL6-I'm aware of the take-off board.  
LL7-No, I am not aware of it.  
TT1-Yes, I'm aware of both the take-off board and the other take-off spot. However, I think it will be much better if it will be no need for me to mention.  
TT2-I'm aware of it. To do so, I feel that the entrance of the first take-off become powerful.  
TT3-Yes, I'm aware of it.  
TT4-No, I don't mention of the take-off board and the take-off spot.  
TT5-I always keep to watch it.  
TT6-No answer.  
TT7-No, I'm not aware of it.  
TT8-Yes.  
TT9-This has been done automatically.  
TT10-It is no necessary to think about the take-off board. The most important thing should be how to get an powerful take-off kick.  
TT11-I'm aware of it.  
TT12-Yes, I am.  
PP1-Yes, I'm aware of it.  
PP2-No, I'm not.  
PP3-I'm aware of it visually.  
PP4-Yes, I am.  
PP5-I aware of the take-off spot.  
PP6-No, I'm not.  
PP7-Yes, I'm aware of it.  
PP8-No, I'm not aware of it.  
PP9-Yes, I am.  
PP10-I'm not aware of it, when I can get a good jump.

10. Do you have a specific way of motion, something like the change of stride rhythms or stride length, etc., while in the final few steps to the take-off to get an active foot placement at the take-off?

LL1-I am always trying to run forward, but it's very often to shorten my stride length so that it's very difficult for me to get a stable rhythm.

LL2-Change the tempo and running stride.

LL3-I do not change my stride length, but build up the pitch to get the powerful running kick and take-off kick.

LL4-I am trying many things to do so.

LL5-I used to buildup the tempo during the final stage of the run-up and lowering the center of the gravity at the point of two steps before the take-off board.

LL6-Change the tempo during the final six steps.

LL7-Building up the running tempo.

TT1-I am trying to build up the running pitch during the final stage of my approach running.

TT2-Build up the running tempo, while the running stride being kept constant.

TT3-Yes, I have. I used to try not to down the running pitch, while not shortening the stride length.

TT4-I am trying not to drop the running speed as extending the arm swing.

TT5-Building up the running tempo during the final stage of the running approach.

TT6-Yes. I build up the tempo of the running steps.

TT7-Gather up the tempo.

TT8-Gather up the tempo.

TT9-I used to change the stride length according to a condition or a feeling.

TT10-I try to gather up the tempo, while keeping a necessary length of strides.

TT11-It's variable.

TT12-No, I don't change my stride length.

PP1-I am trying to run a lots.

PP2-It's depending on the height of the run-ups.

PP3-Shortening the stride length.

PP4-I used to change the running tempo.

PP5-I have no particular way on that.

PP6-It's depending on a power of the approach running.

PP7-Yes, I do so.

PP8-I have no particular way on that.

PP9-I am concerned to keep running high without particular attention of the running kick. I gather up the running tempo as keeping the stride length.

PP10-As before I just try to accelerate the run and move the plant hard, that gives me an active foot placement.

11. Do you feel some differences between the sprint and approach running? What is the differences?

L1-The running approach; the chest is just more up, and more general relaxation.

L2-In sprinting, I run much stronger than I do on an approach running. My approach run is much more controlled.

L3-On the approach running, higher knee-lead than on the sprinting.

L4-Yes, firstly the body position and the controlled speed in the approach. And more relaxation involved in jumping.

L5-Sprinting is a feeling of un-control, approach running is a control sprinting.

L6-Sprint is less controlled. Approach has smaller steps at beginning and the last part of approach. I practice the approach running on a track eight times a practice.

L7-Yes, I think that sprinting must run leaning more forward and having a shortened stride.

L8-Yes. 1) The running approach is a progressive run. 2) You must teach the last few steps of the running approach as fast as possible, in being rhythmic, high on your support foot and in forwarding yourself as much as possible. The best speed to reach on the board for a jumper is the one who allows to keep the balance of the speed with the strength or power== good speed of reaction on the ground.

LL1-Approach running is different from the sprint running. The difference is to run boldly on the sprinting more than in the approach.

LL2-There is a difference. Running for the jump is much more relaxed and the time during the body in the air is longer than the sprinting. But, I am always trying to put my approach running close to a sprint running. The way of running on the approach should be fast and free (relaxed) during the final six steps.

LL3-I distinguish an approach running from a sprint running. On the approach running, the rhythm is very important. On the other hand, on the sprint running this factor is also important, but it has not equal significance.

LL4-Yes, I feel. There is a difference particularly at the stage of introduction of the take-off.

LL5-On the approach running, the supporting phase is much more powerful than on the sprint running. The direction of the movement of the thigh should be forward rather than upward, and the speed of it to downward is faster.

LL6-The following items can be pointed out;

- 1) Upperbody movement is very smooth on the approach running.
- 2) Thigh movement is powerful on the approach running.
- 3) Lifting the thigh is high at the final stage of the approach running.
- 4) On the sprint running, the trunk lean and the whip action of legs are remarkable.

LL7-Sprinting is that run through out the whole distance with the maximum tempo. Approach running is to get the maximum tempo at the final stage.

T1-It is a very big difference between the sprint and the running approach, because we are less relaxed during the sprint than the approach running. Yes, in sprint we try to go always faster, but in the run-up we run very fast, but we prepare to do another thing which is the jump. We are much more relaxed and much more straight.

T2-I feel freer when I'm sprinting. Approach running is the concentration for the take-off takes speed.

T3-No difference. Triple jump take-off should ideally be maximisation of the acceleration over the board. Similarly as a sprints with full stride, sometime after start.

T4-Yes, my run-up is more controlled than my sprinting. I aim to achieve optimum speed rather than maximum speed.

T5-No.

TT1-Yes, there is a difference. In the approach running, I consciously have the important points both at the beginning and the final stage of the process. On the other hand, sprint running only requires a speed.

TT2-In the approach running, the running tempo being saved at the initial stage, and then it is gathering up to the maximal from the last 10 meters. On the other hand, the sprint running should be kept its speed at the maximum from the start to the end. That are the most fundamental differences between two. In addition, I can say that there is getting to be no difference between the sprint and the approach runnings.

TT3-Yes. In the approach running, the running speed is slower than in the sprint running. The reason is the jumper must be prepared for his jumping (take-off).

- TT4-My approach running is depending on the same way as in the sprint running. There is no difference between two for me.
- TT5-I run much bolder in the sprinting than the approaching.
- TT6-Yes, sprint running is faster than the approach running.
- TT7-There is no difference on the running speed between two.
- TT8-Yes, while in the approach running, I hit the ground with my feet on the spur of the moment.
- TT9-I am always trying to proceed to the jump from the sprint running, however I can't do well yet. I think that the approach running for jumping should be the same as the sprint running.
- TT10-Yes, in the approach running the speed is slow( anytime a jumper must prepare for taking off ).
- TT11-Yes! Running rhythm and strides at the final stage of the approach must help the jump.
- TT12-In the approach running, a jumper have a way of running to lift his knees high and to have a bounce.
- P1-When sprinting it is important to run as fast as possible, but to vault is the rhythm and the control more important. To try relaxed and drive into the toe.
- P2-Yes, the approach running is a controlled sprint requires good form and set stride length and systematic accelerating cadence rather than an all act of sprint.
- P3-In the pole vault, you must go fast with a pole in the hands. It result in a big relaxation much more important than in the sprint.
- P4-No difference that I'm aware of.
- P5-The difference is the pole that kind of lacks your shoulders and it also moves your center of gravity a little.
- P6-In sprint, we must run fast, on the running approach we must be able to place a impulsion( this modify the position of the run ).
- P7-The difference is in rhythm. The approach run must not slow in tempo or frequency of motion. Actual speed is not really that important compaired to this. One must be accelerating at the box.
- PP1-Yes, a speed of the approach running is controlled. A jumper must have an up-right position of his upper body( trunk ), and running high during the final stage of his approach running.
- PP2-Approach running requires an easy acceleration.
- PP3-Approach running requires springy way of running( different running rhythm ) and falling its speed rather than in the sprinting.
- PP4-Upper body is leaned in an approach running.
- PP5-As first, holding a pole complicate the approach running. And secondly, it is a difference that there is a take-off followed the approach running for a jumper.
- PP6-Yes, it's different. A jumper is necessary to run as thinking.
- PP7-Yes, a sprinter should have his task to run through-out the course as fast as possible. On the other hand, a jumper should have his task how to build up his running speed for his jump. So that, the jumper gets his top speed during the last 10 to 15 meters of his approach running. However, the sprinter must get his speed in the whole distance. And there is another difference about the running rhythm.
- PP8-Yes, there are some differences about the running posture and the location of the center of the gravity, because of holding a pole during the approach.
- PP9-Yes, it's different. We must run to keep our body high and relax during the final stage on an approach running, as the thigh lifting high and the hip pushing forward. On the approach running especially in the pole vaulting, it is very important to have an smooth control of the pole and to push the hip forward, as his verteral column stretching, pronating his scapula, and

relaxing his upper arms and fore-arms. The running speed is slightly low or well controlled, but as keeping a relaxation and good posture.

PP10-Yes. The sprint uses the arms and the pole runs do not. Also it is important in the vault to attain maximum velocity at the point of take-off only, while in the sprint it should be obtained and held.

H1-Yes, approaching is with control, sprinting is lack of control.

H2-Approach running is controlled sprinting.

H3-Absolutely. I feel approach running needs to be more controlled than sprinting, because of the curve in my approach.

12. What is the cause to do over again your approaching start during the trial? Please choose from the follows, and start with the most frequent reason that cause you to do so. If you have never run over again, please write "no". --1)change of wind, 2)lack of concentration, 3)bad acceleration, 4)collapsed the rhythm, 5)missed the check-mark, and 6)others. ( See the table 12. )

L1-1)change of wind, 2)bad acceleration.

L2-Very seldom I do run over again. Maybe 10 times in 18 years.

L3-No.

L4-No.

L5-No.

L6-No. Never come back. Make sure I am ready or don't do it.

L7-I have never run over again.

L8-1)change of wind, 2)bad acceleration.

LL1-No.

LL2-1)change of wind.

LL3-1)change of wind, 2)lack of concentration.

LL4-1)collapsed the rhythm, 2)bad acceleration, 3)change of wind.

LL5-1)collapsed the rhythm.

LL6-1)change of wind.

LL7-1)collapsed the rhythm; to check an steadiness of the first three steps.

T1-1)missed the check-mark; This allow me to see if I am in condition for this competition.

T2-1)change of wind, 2)lack of concentration.

T3-1)lack of concentration, 2)bad acceleration.

T4-1)collapsed the rhythm, 2)change of wind.

T5-1)change of wind.

TT1-1)change of wind.

TT2-1)collapsed the rhythm; according to be disturbed by another athletes and referees.

TT3-1)change of wind, 2)collapsed the rhythm.

TT4-1)collapsed the rhythm, 2)change of wind.

TT5-1)collapsed the rhythm.

TT6-No.

TT7-1)change of wind, 2)collapsed the rhythm.

TT8-1)change of wind.

TT9-1)change of wind.

TT10-1)change of wind, 2)collapsed the rhythm.

TT11-1)collapsed the rhythm, 2)bad acceleration, 3)change of wind.

TT12-1)change of wind.

P1-1)change of wind, 2)collapsed of the rhythm.

P2-1)lack of concentration.

P3-1)change of wind, 2)bad acceleration, 3)missed the check-mark.

P4-1)change of wind, 2)missed the check-mark.



- P5-1)others; lack of confidence, 2)change of wind, 3)collapsed the rhythm, 4) missed the check-mark.
- P6-1)lack of concentration, 2)change of wind, 3)collapsed the rhythm, 4)bad acceleration, 5)missed the check-mark.
- P7-1)lack of concentration, 2)change of wind.
- PP1-1)lack of concentration, 2)bad acceleration.
- PP2-No.
- PP3--1)change of wind, 2)lack of concentration, but not often.
- PP4-1)change of wind, 2)collapsed the rhythm.
- PP5-1)change of wind.
- PP6-1)change of wind, 2)lack of concentration.
- PP7-No.
- PP8-1)change of wind.
- PP9-1)lack of concentration, 2)bad acceleration, 3)collapsed the rhythm; I am wishing basically not to do over again.
- PP10-1)change of wind, 2)lack of concentration, 3)bad acceleration, 4)collapsed the rhythm, and 5)missed the check-mark.
- H1-1)missed the check-mark, 2)lack of concentration, 3)collapsed the rhythm, 4)bad acceleration.
- H2-No. Unless I slip; 1)lack of concentration, 2)bad acceleration, 4)collapsed the rhythm.
- H3-No! I walk these my approach before each jump, because more acceleration for a higher height.

13-a. In a short paragraph, please describe your basic physical training programme( vid. tables of the basic training programme ).

- L1-Cross country( long-running ), weight training( heavy ), power training, and vollyball.
- L2-My basic work-out is based on sprinting over 150 meters. Repeat and running running approach.
- L3-See my training programme.
- L4-Three month of over-distance, strength and endurance for long season. Early competition months; 2 mile warm-up, sprint work-out daily, approachrunning 20 times daily, 6-9 pop-ups daily. Technique work daily-drills. Summer-top competition; One mile warm-up, one mile warm-down, pop-ups drills, and 20 approach runs daily.
- L5-My training programme consist on sprinting for 25 yards to 330 yards, weight, stadium stairs, and approach and pit work.
- L6-Lots of road-work, one hour runs up-hill. Heavy weight training--Bench press 127kg, Step-ups 136kg; Sprint work--2 x 150( 14"0-14"5 ), 3 x 220( 21-22" ) ---separate work-out.
- L7-See the table of my training programme.
- L8-Jogging with a lot of physical culture( exercise )==Hebert's method==jumps, bars, speed run, natural muscle training( calisthenics ).

T1-Endurance, research of resistance speed, strength, relaxation,variety flexibility, and technique. All those session have very great importants for me.

T2-Weight lifting--Half squats( begin at 82kg in April, rising 4.5kg per week up to 195kg. Bench press( currently 70.5kg 6 x 5 repetitions ), Step-ups, Ankle and calf raise, Curls, Upright rowing, Sit-ups on inclined board.

My running schedule one timed as follows;

- 1) 300m x 10--90sec. recovery. Best time 32.3sec. Repetition time 40sec.
- 2) 200m x 15--90sec. recovery. Best time 20.8sec. Repetition time 26sec.
- 3) 150m x 20--90sec. recovery. Best time 15.0sec. Repetition time 16sec.

4) 100m x varying repetition--90sec. recovery. Best time 10.3sec. Repetition time 11.3-11.2sec.

I attempt to run my repetitions as easily as possible, with as much relaxation as I can get. I do not accelerate during the run. I start from standing position and reach my speed in two or three steps, then hold it for the entire run. This is to give me stride consistence; along with speed and stamina. Stride consistency eliminates possible run-up problems caused by stride too long or too short, or changing with every run.

As the season gets close I stop my 300s and 200s and concentrate on faster running over 100m and 150m. If the running becomes very fast--I may do a session of 10 x 100, in 10.8sec. I lengthen the interval to about two minutes, and in my 60m repetition. I take approximately three minutes per recovery( there are at maximum speed ).

I time the last and second last 10 meters to the board on practice run throughs to give me an acceleration correlation. I aim for a 0.2sec differential to measure my acceleration for the run over the board. My best jump of 17.18m was timed at 0.7/1.0 seconds.

As the season approaches my times decrease and the distance decreases, although for fitness I still run one session of 300s or 200s per week.

T4-For frequency see the table of my training programme. Emphasis is on Squats ( full and half ) and Bench press.

T5-15min.: Jumps without run such as RRL-RRL-RRL, RRRRRRR, LLLLLLL. 15min.: weight machine( totaled 20 tones ).

P1-A lot of running training. Not very much weight lifting any longer.

P2-Try to build strength, speed, coordination through running, weights, vaulting and gymnastics with more emphasis on strength and conditioning in early phases with most on speed toward competitive season.

P3-1) My training based on the run, 2) On the hurdles, 3) Gymnastics.

P4-No answer.

P5-When I lift weights, I make sure I do exercise that are similar to the jump. I also work-out very much like a sprinter.

P6-My basic training is works of will power, speed, and flexibility.

P7-Weight for body strength, intervals for strength and endurance. Cross country for endurance and relaxation. Gymnastics for coordination. Sprint drills for speed.

H1-One mile of jogging daily, 10 wind sprints with 3/4 speed. 15 minutes of exercise.

H2-See the table of my training programme.

H3-Everything is done relaxed and explosive, just like the jump itself.

13-b. Please describe details of your physical training programme; a)strength, b)sprint speed, c)speed endurance, d)jump power, e)endurance, f)flexibility, and g)balance and coordination, including those training methods, conditions, loads, and repetitions.

#### a) Strength

LL1-Barbell full squats; 6-5 times with 60-110kg.

LL2-Full squats, Half squat jump, Flying split with forward move, Flying splits on the spot with barbells, Hurdle jumps, and Leg lounge walking with barbells.

LL3-Lifting 220 tonnages in a year.

LL4-Barbell exercises with a maximum strength method; Jerk, Squats, and Half squat jumpings.

LL5-Special weight training with the maximal and sub-maximal load according to the A.I. Kuznetsov's system.

LL6-Medicin-ball exercises( various throwing with hands and feet ). Barbell exercises; Full squats and Half squats with the maximum loads, Leg press and jumpings.

LL7-No answer.

TT1-Stepping and hopping exercises. Barbell jerk or high clean exercises.

TT2-1)Barbell exercises with 50 to 70% of the maximum load ; Full squats, Step-ups, etc., 2)Kettle-bell( 32kg ); jumping snatch, 3)Shot puttings( 7.257kg. ).

TT3-Five times full squats with a barbell of 60-80kg., and 10 times one leg squats per leg with a load of 50kg.

TT4-Jump exercise with 2 to 32kg Kettle-bell with 15 times repetitions and 3-4 sets; Half squat jumpings as loaded in order at 80-100-120-100-80kg and 2-4-3 sets; Step-ups on a box of 50-60cm high with a load of 60kg barbell and 10 times repetitions per leg.

TT5-Jumping exercises with a barbell of 60-70kg; Squatting 10 times with a barbell.

TT6-Full and half squattings with a barbell of 120-180kg.

TT7-Weight trainings with barbells of various load ; and strength exercises using a training machine.

TT8-Squatting with a partner, and barbell exercises.

TT9-Barbell exercises.

TT10-I have done strength, sprint speed, jump power, flexibility, and balance and coordination trainings in my past career.

TT11-Barbell exercises; Jerk, Full squats, Half squats, and Squat jumpings.

TT12-Barbell exercises; High clean, Full squats, Step-ups, Full squatting to measure a time, and Barbell jerk.

PP1-Rope climbing, and wall bars exercises.

PP2-Special strength exercises.

PP3-Gymnastics, and strength exercises with a partner.

PP4-Special exercises with dumbbell, medicine ball, and barbells.

PP5-Barbell exercises, special exercises, and exercises with the training machine.

PP6-Barbell exercises and gymnastics.

PP7-Weight trainings and gymnastics.

PP8-Barbell exercises.

PP9-Barbell exercises; Bench press, Pull over, Jerk, and Squats. Gymnastics; Rings, Horizontal bar, and Rope exercises( Free hip circle backward to support or to handstand on the Horizontal bar, shoot-up or Felge upward swing on the Parallel bars and the Rings. ), and kettle-bell exercises; 2-3 times a week during a preparation period.

PP10-Weights three times a week; Cleans and jerks, Squats, Inclined presses, Sit-ups with weights, Straight arm pull over and occasionally others. Lifts are in a piramid with increasing weight and decreasing repetitions.

#### b) Sprint speed

LL1-20m dush from running start, 50-100m sprints from crouching start.

LL2-30, 40, 50, 60, 80, 100, and 150m running from standing starts; 30m run from running starts; those are done alternatively with the barbell exercise.

LL3-Running 56km in a year.

LL4-Sprinting of 30 to 100m.

LL5-30 to 150m running.

LL6-30 to 50m run from crouching start, and 30 to 40m run from the running start.

TT1-Sprinting both from running and crouching starts.

TT2-1)50m dush from standing start, 2)Hurdle running with each foot, 106-7cm high, 3)20m dush from running start.

TT3-Fast running of 30, 40, 50, 80, and 150m from a standing start, and 20, 30, 40m dush from a running start.

- TT4-Sprint dush of 30, 40, 50, 80, and 150m from a standing start, and 20, 30, 40m dush from a running start.
- TT5-Full sprinting of 30-40m( from crouching and running starts ).
- TT6-30-50m run.
- TT7-Sprint running under the controlled speed on various distances.
- TT8-Repetition running of 50m.
- TT9-Sprinting and relaxation runnings of 40-100m.
- TT11-Running over a distance of 20-150m.
- PP1-30, 50, and 80m run from running start; 30, 40, 50, and 100m run from crouching and standing starts.
- PP2-Runnings in settled distance with the maximum speed.
- PP3-Various speint runnings.
- PP4-Special running exercises; Build-up running as changing a running tempo from crouching and running starts.
- PP5-30-80m sprint dush( time trials both from crouching and running starts ).
- PP6-20, 30, 40, 50, 60, 80, and 100m runnings.
- PP7-Build up runnings and special running exercises.
- PP8-Start dush over the distances of 10-150m.
- PP9-Sprint runnings of 30-50, and 100m from running or crouching starts. During the preparation period; including 300-500m running in 2-3 times of the sprint training in a week. During the competition period; once a week.
- PP10-I try to be in good shape first. Then I do many fast 150, 100, 75, 50, and pole runs. I concentrate on proper running not speed. But later in the season I run less repetitions and faster.

#### c) Speed endurance

- LL1-No answer.
- LL2-200, 250, and 300m runs.
- LL3-Running 70km in a year.
- LL4-Sprinting of 150 to 200m.
- LL5-10 x 30m run from crouching start, and 10 x 30m run from running start.
- LL6-Repetition and interval runnings over the various distances from 120-150 to 200m.
- TT1-150-200m run.
- TT2-1)Interval running 100m x 15, 2) 150m run from start, 3) 50m dush with a minimum time of rest.
- TT3-150 and 200m x 5 within 20-30sec.; for a triple jumper, the complex ability with strength, sprinting, and jump power is the most important.
- TT4-Tempo running of 150, 200, 300, and 400m; repeting after resting completely.
- TT5-150-200m run within 28-30sec.
- TT6-150-250m runs.
- TT7-Interval runnings over 50m.
- TT8-100, 150, and 200m runnings.
- TT9-150, 200, and 400m runnings.
- TT11-Running over a distance of 150-300m.
- TT12-80, 60, 30m interval runnings.
- PP1-100, 150, 200, and 400m run, and interval runnings( 100m dush plus 100m jog ).
- PP2-Cross country 30-40min., and long distance sprintings of 120-300m.
- PP3-200m full sprinting.
- PP4-Repetition runnings to change distances variously and to have many variations of a resting time between the runnings.
- PP5-Repetitions of 100-300m running with short intervals.
- PP6-Interval runnings of 40-120m.
- PP7-Fartlek, and repetitions of 150-200-250m.
- PP8-Fartlek, interval running and repetition runnings over the distances of 100-300m.

PP9-120, 150, 200, and 300m runs, including 300-1,00m runs. During the preparation period; twice a week, and during the competition period; once a week.  
PP10-This is mainly achieved by doing many pole runs during the week.

#### d) Jump power

LL1-High jumping, and long jumping with 10-30m approach runnings.  
LL2-1) Combination with the barbells and jumping exercises such as hopping and steppings. 2) Take off exercises holding weights on the shoulders or in the hands from four steps approach runs. 3) Measuring a time of five times full squatting with a barbell of my body weight.  
LL3-No answer.  
LL4-1) Jumping exercises with barbell up to the maximum weights. 2) Stepping exercises. 3) Other various jumping exercises.  
LL5-Jumpings with short, half, and full approach runnings.  
LL6-No answer.

TT1-Repetition works on jumping.  
TT2-Hopping 50m, Double footed flog jumpings, Deep hoppings, and Depth triple jump.  
TT3-Hopping over 20-50m, and depth jumping from 90cm high.  
TT4-Hopping exercise over 50m; 5 and 10 fold boundings with six steps approach running; Bounding over 50-100m as measuring the required time with minimum steps; Deep hoppings; Deep boundings; Depth jumpings from a horse back of 91cm high; Double footed flog jump.  
TT5-Hopping exercises on each leg over 50m.  
TT6-20,30,40, and 50m hoppings.  
TT7-All of the various jumping exercises, long jump, and triple jump.  
TT8-Long jump, high jump, standing triple jump, and quintuple jump with 6-7 steps approach running.  
TT9-Jumping exercise holding a barbell.  
TT11-Jumping exercises with a partner, and barbell exercises.  
TT12-Quintuple jump, and various jumpings using a take-off board.

PP1-Long jump, jumpings holding a barbell on my shoulder, and hopping exercises.  
PP2-Vaulting with fast approach runnings.  
PP3-Vaultings a lot.  
PP4-Variou jumpings to change conditions; as making difficult conditions.  
PP5-The power for the vaulter seems to be decided with the number of the pole. As getting higher run-up speed and heavier the vaulter's body weight, the jump power should become greater.  
PP6-Long jumping and high jumping.  
PP7-Variou jumping exercises.  
PP8-Practices to get an correct( exact ) hanging position from the speedy running approach.  
PP9-Standing long jump, running long jump, and high jumpings. 12-15 jumps in one training session. Once or twice a week.  
PP10-I have not worked much on this other than in the weight room.

#### e) Endurance.

LL1-No answer.  
LL2-No answer.  
LL3-No answer.  
LL4-Cross country running--evenpace running, interval running, and stride running.  
LL5-Cross country running, Basketball, and pentathlon.  
LL6-40 to 60 minutes cross country running, or 20 to 25 minutes tempo runnings.

TT1-Soccorball game( usually indoor soccor ).  
TT2-Cross country running within 60minute; 200m and 400m run; Hopping 50m x 40.  
TT3-Ball game 60-90min.; Cross country 45min.; 150-200m run x 5 with about 30sec.  
TT4-Tempo running in cross country running.

TT5-Cross country 30min., or ball game 60min.  
TT6-Ball game 60min.; Cross country running for 30min.  
TT7-Running over the distance of 100m; Cross country runnings.  
TT8-Cross country running.  
TT9-Soccerball game.  
TT11-Cross country and 60-200m boundings.  
TT12-150-300m runnings.

PP1-Vaulting a lot of times, and cross country within 30min.  
PP2-No answer.  
PP3-High intensity trainings.  
PP4-Trying to vault about 30-35 times in an training session, and cross country.  
PP5-Long jogging; cross country; basketball.  
PP6-Cross country running.  
PP9-General endurance--cross country( once a week for about 30min. ). Special endurance--doing a lot of running approach and vaulting 30-45 times in one training day.  
PP10-I don't try for endurance, but pick it up by doing many runs and jumps in practice.

#### f) Flexibility

LL1-Special exercise to stretch muscles in every training.  
LL2-Variable exercises to stretch muscles at the beginning or the end of the daily training.  
LL3-No answer.  
LL4-Various exercises.  
LL5-Various exercises with light weights.  
LL6-Various exercises without instruments.

TT1-Gymnastics.  
TT2-Exercises using wall bars, and exercises with loads.  
TT3-Special exercises for 45 minutes.  
TT4-Various exercises to get a mobility of the articular joints.  
TT5-Flexibility exercises at the beginning of the daily training activity.  
TT6-Special exercises.  
TT7-Various gymnastic exercises.  
TT8-Flexion and extension exercises, and swinging exercises.  
TT9-Gymnastic exercises.  
TT11-Special exercises.  
TT12-Concentrating on the acrobatic exercises.

PP1-Many flexibility exercises to loose my shoulder joints.  
PP2-Flexibility exercises.  
PP3-Stretching exercises at the beginning of the training and taking a Sauna-bath.  
PP4-Special exercises to stretch muscles by myself or with a partner.  
PP5-Special exercises for flexibility.  
PP6-Gymnastic exercises.  
PP7-Every day's exercises for stretching muscles.  
PP8-Acrobatic exercises.  
PP9-Twice a day about 15 minutes. Doing freely but not doing hard to get its maximum.  
PP10-Each day I spend from 20-40minutes stretching. I concentrate on my back and legs much emphasis on stretching my quadriceps.

#### g) Balance and Coordination

LL1-Imitation exercise of the long jump--trying to do a jumping technique while walking on the ground.

achieve top speed faster. When I reach my check-mark( 22.5m from the take-off ) I raise my head and drive toward the board with powerful but fluid strides. I run-off the board. As I approach the board, my stride become longer as in the high jumping. I start track and field as a high jumper; when I could'nt improve in high jump, I started long jumping.

L6-Sprint work and run-through for approach exercises.

L7-1) "Landing style" training. 2) Jumps by 15-30m approach running. 3) Jumps over 80-130cm high hurdle with 15m approach running.

L8-Technical jump on 7, 9, 11 steps, and complete running approach with take-off rhythm in courses and on hurdles.

T1-1) Successive jump, 2) Hopping left and right, 3) Double hopping, 4) Standing triple jump, 5) Triple jump with short run-ups, but looking for the distance and the speed of the jump.

T2-Technique--main: Long jump, Hop, step, and jump work, and Triple jump( short and middle approach run ).

T3-1) Concentration on hopping and bounding on both legs. 2) Jump exercises such as 2 hops--1 step--1 jump of either leg. 3) Long jumping of "wrong" foot. 4) Many pop-up triple jumps off six stride approach.

T4-The weakest part of my jumping is the final phase of my weak leg. Most of my technique work is directed towards improving this.

T5-1) Triple jump with variable run-ups( beginning with three steps up to 11 steps ). 2) Long jump with both legs( concentration on take-o-f phase and landing ). 3) Triple jump with full run-ups( control with the VTR ). 4) "Five jump"( for keeping up speed ): RRLRL with variable run-ups.

P1-In the spring, a lot of technique and later I try to do less quantity and more quality.

P2-Trying to work on developing a better and faster run and a better take-off and higher hand hold.

P3-My technical work mostly based on the impulsion( good forward penetration ). All the rest is not important.

P4-My technical work programme is basic jumping eith the bar. With the bar as high as possible, I try to jump at least two times at a time.

P5-I practice to work on a slight softer pole and to concentrate on technical detail in every jump. I always try to work on my weakest points.

P6-The technical training is based on the running approach, and the handling the vault.

P7-All work devoted to run and take-off; 1) lots of runs with pole on track( with plant ), 2)lots of plants with heavy pipe, 3)grand-stand running with heavy pipe.

H1-Same as the answer to the question on the physical training( 14-a ).

H2-Jump 15-20 times, watching acceleration, take-off, and position over the bar.

H3-Non existent. I do not jump in training.

14-b. As referring the jumping illustration shown another paper, would you point out your characteristics from a technical point of view, and point out where you aware rhythmical accent in a series of the motion process. Finally, please describe your typical methods about the exercises of jumping technique referring the figure. ( See the table 13 for the triple jumper, and the table 14 for the pole vaulter on their characteristics of the jumpings, and the figures about the characteristics of their motions. )

During the preparation period

During the competition period

LL1-50% for the general and all-round training, and 50% for the special training.

LL2-Imitation exercise about the jumping technique.  
LL3-No answer.  
LL4-Gymnastics.  
LL5-Acrobat, Tennis, etc.  
LL6-Jumping exercises, hurdling, crouching start, and high jumping to use the opposite foot( e.g. free or swing leg ).

TT1-Ball games.  
TT2-Double footed jumps, and gymnastics--Floor exercises( e.g. rollings and hand-standings. ).  
TT3-Ball game, and imitation exercises.  
TT4-I do not have this many.  
TT5-Imitation exercises.  
TT6-Imitation exercises.  
TT7-Imitation exercises.  
TT8-No work on this.  
TT9-Ball games.  
TT11-Gymnastics exercises.  
TT12-Concentrating on the acrobatic exercises.

PP1-Acrobatic exercises and Trampoline exercises.  
PP2-Trampoline and gymnastic jumpings.  
PP3-Trampoline and gymnastic jumpints.  
PP4-Special exercises handling a pole as using various grip heights.  
PP5-Gymnastics, acrobatic exercises, and Trampoline.  
PP6-Gymnastics.  
PP7-Gymnastics.  
PP8-Ball games.  
PP9-Acrobat and Trampoline--twice a week for about 30min.  
PP10-I am very poor here and only do occasional gymnastics.

14-a. In a short paragraph, please describe your basic technical work programme.

L1-Beginning of the winter: Bench technique, ground technique, and running approach.  
L2-Pop up jumps, landing technique, and running approach.

L3-No answer.

L4-50 yards high knee drills. Strong leg pop-up step, three steps pop-ups, concentrating lead knee projection and head, trunk and arm position. Hurdling to help my timing and even body lean.

L5-This is my weakest part of my jumping. I'm too inconsistence in my approach. I will develop this area this year. American athletes( track and field ) usually have bad technique and depend on their conditions and natural abilities. This is my main weak point. I spend 90% of my training programme on speed and strength. Very few hours is spent on the run-way. In 1972-1974, the only time I seen the long jump run-way was during competition. This contributed to a bad approach, but I have a lot of speed and strength to over come it. This year, I will spend more hours on the run-way striving to jump at 100% effort.

I feel that young jumpers should spend majority of their time on speed and strength work-out instead of pit work. Many great American jumpers never jump in practice. Also competing in other event such as high jump, 220y, 440y, triple jump, and hurdles, contributing to strength in the long jump ability. I compete in these event every track meet that have so important. My total belief in the long jump is to run down the run-way as fast as I can and jump. Simple but effective. It might be worth noting that suring my first half of my approach I will run my head down and a forward lean--to



During the preparation period

During the competition period

LL2-No answer.

LL3-I used to take a synthetic method of the technical training; in concrete, barbell exercises, basic physical fitness training, bounding exercises, exercises for build up individual muscle group, trainings for speed endurance, and flexibility exercises.

LL4-All-round training.

LL5-Weight training(40%), speed-strength exercise(power training=30%), jumping from short or middle distance approach(30%).

LL6-Exercise on a building-up method of a rhythm of the approach run on the track, imitation exercise for the take-off and the entrance for the jump, repetitive take-off exercise for the technical factors (jumping over 3-5 hurdles), bounding and hopping exercises.

LL7-I always concentrate my mind on the entrance of the take-off at the final two steps of my approach running, the timing of the swing-up of the lead leg, arm action in the air, and the landing.

TT1-My technical trainings are depending on bounding and hopping exercises, and the triple jumping with short distance approach running.

TT2-I take hopping exercises, running exercises with an approach-rhythm, imitation exercises, and stepping exercises(the first and fourth are the synthetic training, and the second and the third are special training).

TT3-For the synthetic training, I use various jumping exercises over the distance of 40-50 meters, and the imitation exercises, and the sprintings over the distance about 30-40 meters from running or standing starts. For the special training, I take "Hop-Hop-Step" work about 20-30 meters and "Hopping" work about 20-40 meters.

TT4-Hopping exercise over the distance about 50-100m, 5-jumps and 10-jumps for the technical exercises.

I take a special method of the technical training which are to be concrete as sprintings at the maximum speed, technical exercises of the long jump, etc...

Special training.

Speed training(40%), weight training(10%), power training(10%), jumps from full approach running(40%).

Approaching exercises on the run-way. jumpings from the middle and the full running approach. Approaching exercises on the track. Imitation exercises.

I take hopping exercises, depth jumpings, triple jumping with a short run-ups, triple jumping with a full run-ups, and approach running.

Triple jump with the various approach distances of 10, 12, 14 steps, 5-jumping with 6-8 steps approach running, and the long jump with 10-12 steps approach running.

TT5-No answer.

TT6-For the synthetic training, I use sprint dush of 30-50m from the running or standing starts, and hopping exercises for 30-20-50 meters. For the special training, I used to take the triple jumping with 10-14 steps running approach, and the hop exercise into the pit from approach running.

TT7-Imitation exercises, and jumps from various distances of the running approach.

Repetition works on the whole or the part of the jumping processes.

TT8-All-round training method for build up the general physical fitness, strength and endurance.

Sprint running, repetition running, and approach running exercises, and the triple jumps eith 9-13 steps approach-runs.

During the preparation period

During the competition period

TT9-I have been using both of synthetic and special trainings.

TT10-For the synthetic training, I want to offer various jumping exercises over the distance 40-50-60 meters.

TT11-On my technical training, I am concerning on the correct foot placement and the correct swing leg action--fast and powerful swing, as doing hopping exercises. And at the same time, I am also concerning on full stretching the take-off leg during the take-off action.

TT12-Synthetic training about 70%, and special training about 30%. Synthetic training about 30%, and special training about 70%.

( Characteristics and the most desirable ration of the triple jump are shown on the table 13. )

PP1-Special barbell exercises and then gymnastics; Gymnastics then special vaulting exercise, and then vaulting.

Special vaulting exercises and vaulting.

PP2-No answer.

PP3-Various sprinting exercises, hopping and stepping exercises, special vaulting exercises, and vaulting with a "soft-bending" pole.

Lots of running exercises at an approach rhythm as holding a pole; Various gymnastics on the horizontal bar, the rings, and the paralel bars, etc.; Vaulting with long distance approach running.

PP4-Special exercises holding a pole; Vaultings with 2, 4, or 6 steps approach runnings; Divisional exercises on "penetration" and "pull-turn" etc.; Exercises on pole planting as concentrating my mind on the last 2-4 steps of my approach running; Vaultings with 10-12 steps approach running; Swing exercise on the horizontal bar or the rings ( Free hip circle backward or Felge upward swing, shoot-up, to hand stand ).

"Penetration" exercise with a middle or a full approach running as holding a pole; Long jumping without the take-off board from the middle or full distance of the approach-run; Vaultings from a middle or a full distance of the approach-run.

PP5-Barbell exercises; Sprintings over the distance of 100-300m; Hopping exercise; Gymnastics; Imitation exercises; Vaultings; Long jump, Hurdles, and Shot-putting.

Vaultings; Short speintings and the special exercises; Imitations holding a pole; Barbell exercises.

PP6-No answer.

PP7-My basic training for vaulting is depending on 1) Barbell exercises, 2) Gymnastics, 3) Acrobatic exercises, and 4) Sprint exercises. I am concerning to build up the muscle groups which will be in active for vaulting, as doing special muscle strength training and sprint training. I am also concerning to make the best use of specific muscle strength to the vaulting technique. And then, I must concern making the best use of the technique to the performance.

PP8-Barbell exercises; Acrobatic exercises; Vaultings; Hurdles; Long jump; Sprint runnings; Ball-throwings; Ball games.

Vaultings; Sprint runnings; Long jump; Hurdles.

PP9-I take for my technical training methods as follows: Gymnastics--Free hip circle backward or Felge upward swing( shoot-up ) to the hand stand on the horizontal bar and the rings; Pole planting and penetration exercises; Vaultings itself.

PP10-Training methods about my vaulting during the preparation period: The most important is the many pole runs I do. I mark my run on the track and run as if I am going to jump. I plant the pole in a wooden box( moveable ) and jump. On different days I work on different phases.

For my plant I use the same wooden box on the track and do five steps plant drills( or pop-ups ), concentrated on the forward movement and upward thrust of the plant.

Next I do eight stride, 3.80m grip high, swing-ups into the pit. Here I am working on the timing of the take-off and the rhythms.

Next I do a lot of short run vaulting. Holding 30cm lower than the normal on a smaller weight pole and jump from le strids rather than 20. Here I concentrate on technique at the take-off, but also on the pole. I put the bar at 490-520cm.

Finally I do my long run, 20 strides, vault and mainly try to jump high, worrying only a little about the technique. During the competition period, I do the same things, more or less, depending on what I need the most. (Characteristics, height, and width of the hand grip of the pole for the pole vaulter are shown on the table 14. )

15. Would you show me your warm-ups, both in the training and the competition and its time.

#### During the training

LL1-15min( running 5min, calisthenics 10 min, build-ups 100m x 3.

LL2-20 to 30min.

LL3-Jogging 10min, stretching exercise 10min, special exercise 10min, build ups 150-200m.

LL4-40 to 45min.

LL5-40min.

LL6-Jogging about 3km, flexibility exercise 10-15min, running and special exercise about 500-600m, build-ups 500-600m.

LL7-Jogging 800m, flexibility exercise 15min, running exercise 300m, build ups 200-300m with 3/4 effort.

TT1-Running, easy build-ups, and jumps.

TT2-Running 15min, flexibility exercise, running 100m x 5.

TT3-20min; running 5-7min, calisthenics 15min.

TT4-About 20min; runnings of 100m x 4-5 as building up the running pace one by one.

TT5-Running 5min, calisthenics 15min, running exercise 50m x6, build-ups 100m x 3.

#### During the competition

30min( running 5min, calisthenics 15min, build-ups 70m x 4, long jump x 3, approach running x 2 )

30 to 40min.

Same as in the training.

50min.

60min.

Almost the same as in the training, plus sprinting from running start, and jumps 3-4 times from short run-ups.

800m running, flexibility exercise 20 min, running exercise 200m, build-ups 100-150m up to the maximum speed, and approach running 2-3 times.

Running, build-ups, trial jumps, and approach runnings.

Running 20min, flexibility exercise, sprints 30 x 4, hopping exercise 200m.

40min; running 3-5min, calisthenics 20 min, build-ups 100m x 3, hopping exercise 20m, triple jumps with 20m approach running x 2, approach runnin x 2.

About 40min; runnings of 80m x 3 as building-up the running pace one by one, and running and jumping exercises.

Running 7min, calisthenics 15min, jump exercise 40m x 3, build-ups 75m x 2, approach run x 2, triple jump x 2.

During the training

During the competition

TT6-20min; running 5min, calisthenics 15min.

30min; running 3min, calisthenics 10 min, build-ups 100m x 2, jump exercise 50m x 3, approach running x 2, triple jump from 20m approach x 2.

TT7-Easy running, calisthenics, build-ups and jump exercise.

Same as in the training.

TT8-Easy and speedy warm-ups.

Easy continuous warm-ups; stretching exercise, build-ups, hopping work and take-off work.

TT9-20 to 30min.

Depending on the weather and the quality of meet. 15-20 min on a hot day, and 40-60min on a cold day.

TT10-25min.

40min.

TT11-35min.

40min.

TT12-30min.

45min.

PP1-30 to 40min; 800-1,000m run, calisthenics, and build-ups 80m x 4.

800m running, calisthenics, build-ups 70m x 2, approach running, trial jump 1-2times passing through the board.

PP2-1,000m running, calisthenics, and build-ups 80m x 5.

Same as in the training.

PP3-20-25min.

30min and plus doing the warm-ups between the trials.

PP4-Doing careful warm-up for loosening all muscles for 30min.

Doing easy warm-up as considering to get into the perfect condition along the development of the meet.

PP5-Running, flexibility exercise, special running exercise holding or not holding a pole.

Running, flexibility exercise, build-ups, and special exercise holding a pole.

PP6-Easy running 5min, calisthenics, and build-ups 80m x 3-4.

Same as in the training.

PP7-10 to 20min.

10 to 20min.

PP8-Flexibility exercise, special exercise holding a pole.

Same as in the training.

PP9-45min; jogging 1,000m, calisthenics, flexibility exercise, strength exercise( about one or two of them ), and build-ups 70m x 3.

About 60min in the field; 800-1,000m running, flexibility exercise, build-ups 60m x 3, special exercise holding a pole, trials of approach running 2-3 times, and vaultings 1-2 times.

PP10-20 to 40min; stretching, 3/4mile jog, two sets of six different sprint drills including bounding for about 30m, 3 x 100m( 75% effort ).

20min stretching, 3/4mile jogging, 3 x 100m( 75% effort ), 2 x 75m( 100% ), two pole runs, four swing-ups and about 3-5 vaults.

16. What is your basic training programme throughout a year? Please describe your basic seekly training programme from each period, after encircling the number of the month on the table to show your training periodization, such as the preparation period( general and special ) including indoor season, the competition period( early, middle, and late ), and the transitionperiod. And please put the number of meets into the table which you participate in each month during the recent season. ( See the special table for this answers. )

17. How many times do you prefer to have a competition in a month during the competition period? (See the table 15 for the answers to the question. )

18. How do you think about the value of the indoor meet( or indoor season ) for your progress throughout a year? Do you think if it is necessary to have the indoor season for your progress?

LL1-The winter season seems to be very useful for my progress in jumping.

LL2-I think I will be able to get an reasonable progress without a winter season.

I don't think that the winter season has been contributing for my progress.

LL3-No answer.

LL4-Yes, I think so.

LL5-Yes, it's useful for my progress.

LL6-I think it will be necessary for me to have indoor games.

LL7-Indoor meets are very useful to improve the training process.

TT1-It's very good. Meets in winter is necessary to the training activity.

TT2-The winter season is a very good chance to check out the training up to this time, whether it has been on the good process toward the next coming summer season or not.

TT3-It is necessary for athletes of Sports-masters to take part in the competitions in winter. But, on the other hand, it's no need for Junior athletes to take part in the meets in winter.

TT4-It's necessary.

TT5-No, I don't think so.

TT6-No answer.

TT7-No, I don't think so.

TT8-Yes, I think it's necessary.

TT9-I put to practical use about these meets in winter for checking out the condition level trained during the preparation period.

TT10-I apply it for as an control test to check out how I have been getting an correct move. And, I think it's necessary, but there should be an limitation.

TT11-Yes, I think so.

TT12-Yes, I think so.

PP1-Yes, I think so.

PP2-It is helpful to get an stable sports-form or well prepared competitive best condition.

PP3-I consider those indoor meets in winter as a part of training to be formed with an competition training method.

PP4-I apply them as a control test to check out the developmental level on the technique and the fitnesses.

PP5-Indoor meets in winter seem to be useful to build-up the basement for the outdoor summer season.

PP6-It is very useful to build up the technique at a high level. I think it is necessary to have indoor season for my progress.

PP7-Yes, I think it's very helpful for my progress, and it's necessary.

PP8-I think it's necessary to my technical training.

PP9-Yes, I think so.

PP10-I think the indoor meet adds excitement and incentive, so it is important.

But, I don't like to taper my training for them, as you saw with my performance in Japan.

19. How long do you want to take time for your preparation to the big meet such as the Olympic Games, European Championships, and/or the National Championships?

LL1-No answer.

LL2-Five to Four months.

LL3-Two weeks before the meet.

LL4-Six months.

LL5-Four years for the Olympic Games, two years for the European Championships.

LL6-Four to five months.

LL7-15 weeks.

TT1-I am preparing for a whole periods of my spot activity to those important meets.

TT2-Four years for the Olympic Games, and one month for the CCCP Championships.

TT3-Five to six months.

TT4-Two to three months.

TT5-One month.

TT6-Five to six months.

TT7-One year.

TT8-One year for the most important meet, and six months for the second.

TT9-Preparing every day throughout the whole training and competition processes.

TT10-Five to six weeks.

TT11-Four years for the Olympic Games, and 2-3 years for other meets.

TT12-One to two months.

PP1-Three weeks, if I think only about the direct preparation for the meet.

PP2-Two years.

PP3-Two years for the Olympic Games, one year for the European Championships, and six months for the CCCP Championships.

PP5-No answer.

PP6-One year.

PP7-Three to five months.

PP8-Four years for the Olympic Games.

PP9-One month for the direct preparation to the meet.

PP10-Usually I keep on my schedule and prepare mentally for two weeks. Maybe I take one extra day of rest the week before.

20. How much of your success is due to coaching? Please write your coach's name in past and present.

LL1-V.A. Kreer, and A. Ter-Ovanesian.

LL2-Depending 50-50% from my coach and myself. V.V. Soldatkin.

LL3-B.M. Bulret; A lot of my successes depend upon my coach. He has been dedicating so much to build up my condition toward a meet, and he has been giving me the best condition at the day of meet.

LL4-I have been dueing to my coaches; V.S. Kozylets, and G.A. Zohnov.

LL5-I have gotten many contributions from L.D. Baraschovsky, and A.I. Kuznetsov.

LL6-Y.N. Tronov, and A.I. Kuznetsov.

LL7-A.I. Kuznetsov. My success, I think, depended on my coach about 50%.

TT1-V.A. Kreer.

TT2-My success has been depending on my coach a lot. V.V. Ikohnin.

TT3-D.D. Zylkin; I think a level of dependence to own coach is about 90% for the Junior athletes, and about 50% for the ports-masters.

TT4-G.D. Uzlov; I have been depending on him so much.

TT5-Yes, I think so. V.A. Kreer.

TT6-V.A. Kreer.

TT7-G.D. Resh in past; L.V. Nestelov and V.A. Kreer in present.

TT8-I have been depending on very much. B.N. Abramov, and V.A. Kreer.

TT9-V.A. Kreer.

TT10-About 50% for the Sports-master.

TT11-V.I. Chimoshenko, and G.D. Uzlov.

TT12-About 20%; O. Starnek and then Merihalk.

PP1-Depending on so much. V.G. Bratov, and V.M. Yagodzin.

PP2-V.I. Isahkin, and V.M. Yagodzin.

PP3-It's just an direct propotion. My coach is V.Y. Rosenfelid.

PP4-The issue of coaching is depended on whether a coach and his athlete have an agreement on their opinions about the technique of the jump and the training method, and whether his athletes have an ability to make an objective valuation and adaptation about his instructions. My coach was V.I. Alexeev.

PP5-The success will be decided by the training method and the personal contacts between them, coach and his athlete.

PP6-It's no need to say. A.P. Bogdan.

PP7-He, V.Y. Rosenfelid, is very helpful for me.

PP8-V.V. Solobiyov, and V.M. Chipakov.

PP9-Yes, I think so.

PP10-About 90%. Tom Tellez at the University of Houston, Athletic Department, Houston, Texas. But, I have not now.

21. In your personal judgement, how do you feel the differences on action while jumping and sprinting on the synthetic track, lik TARTAN, comparing with the cinder or other track? And, do you feel some necessity to remodel or renew motions to adapt to or utilize the new synthetic track?

L1-More sprint on the synthetic track in the run--research of the run more forward.

L2-Yes, I feel. But, I feel you will automatically change your running style to fit the new tracks.

L3-No answer.

L4-Technique is the key on any surface. If you know what you are doing and why changes are know problem "relaxation".

L5-I have never jump on cinder track so I can't reply. All my practice and come-titions is on tartan or synthetic, so I don't be knowledgeable to answer this question.

L6-Haven't trained on a cinder track in five years.

L7-I like tartan more, because it gives me opportunity to use better my sprinting speed. Disadvantages for tartan: too slippery when it is raining, and too heavy to run when it is raining.

L8-1) On this synthetic track, it's prefereable to run--by lifting knees very high( Tracter ). 2) On the cinder track, we had big portion of jumpers who did run by pushing far behind themselvs( Pousseur ).

LL1-Yes, I feel some differences and necessity to adapt t-o the new synthetic track.

LL2-Yes, I feel. The tartan track is excellent. I used to adapt the approach running to the tartan track, but I don't think to do so to the take-off.

LL3-There is a difference between them, especially while in running. But, I don't think to be necessary renewing the motions.

LL4-Yes, I feel some differences and to be necessary renewing the motions.

LL5-Yes, I feel some differences and to be necessary renewing the motions.

LL6-Yes, I feel some differences especially on its elasticity and its viscosity, so that I think some necessity to adapt the motions to it.

LL7-Yes, I think so.

TL1-Personally, I think that we feel better on the tartan track. It can't have a change in the movement, but we feel the bounce better in the run and even in the jump.

T2-Synthetic: quicker--better results, more danger for bone and muscles especially when slipped. Normal: slower--worse results, but better for body( healthier ).

T3-Synthetic track lengthens stride and enable higher knees lift. It is necessary for me to concentrate move on leg speed, rather than stride length. Jumper's tend to "pop-up" into the air mover. Case must be taken to "start low".

T4-The movements must be much more precise on tartan, because of the lack of force dissipation in that surface.

T5-When the new stadium of Stuttgart had got a new tartan track, I demonstrated jumping without shoes to show the journalists that the new material does not hurt heels etc. Best result was 16.00m!! This was 1969. Since then all my competition were on tartan( or similar material ), some on rubber rugs, indoor meets on wood.

TT1-Tartan is very helpful for the progress of records. But, I don't think it's necessary to renew the motions.

TT2-There is a quite big difference on them. I think that the tartan is the most suitable material for the surface of the track. I have been always training on the tartan track, so that I have some uneasiness to jump on the other materials of the run-way.

TT3-Yes, I feel some differences, and I need to kick the ground faster.

TT4-There is a very big difference and it takes a lot of time to get familiar with it. I think there is a difference of the running form between on them, so that I feel some necessity to change the running form to adapt the tartan.

TT5-Yes, I think so.

TT6-Yes, I think so.

TT7-Yes, I feel some differences between them, and I think that I need to renew the motions to adapt it.

TT8-Yes, I feel a little differences between them. And I need some adaptations to it.

TT9-I think the tartan track gives us progress on our jumping, but it's no need to renew the motion.

TT10-Yes, I think so. The tartan track is very helpful during the kicking to be able to give me the faster motion and the greater momentum.

TT11-Yes, I think so.

TT12-I have no idea on the tartan track, because I had never jumped on it during my career.

P1-Those synthetic tracks are very consistent and whether does not affect you so much. It is important not to let your feet take ground so far in front of you.

P2-I personally like tartan better, because of its springiness. Although I've had good jumps off on asphalt. The jump I feel is basically the same.

P3-No difference in the jump. The tartan track a better in the rain. But no difference in the running approach. The tartan track is faster than the cinder track.

P4-The difference between tartan and cinder is like night and day. Maybe tartan is the best. But there many other synthetic tracks that are as good as tartan.

P5-To run on tartan comes usual for me and I like it very much. I feel that the run-way have more life when I run on tartan.

P6-The synthetic track favourise on the speed run. We often notice a lengthening of the steps.

P7-The runway does not make that much difference--the individual is the main variable.

PP1-Yes, I think there is a difference between them and some necessities to adapt it; to be necessary the smoother running on the tartan track, but not making a pop-up running.

PP2-No, I don't think so. There seems to be no difference and necessity to renew the motions.

PP3-I feel a good sense to run on the tartan track. The softer the soil of the ground is, the harder feeling I get on my foot sole to kick during the approach running.



PP4-Yes, I feel some differences. I admit the necessity to renew the motion to it

PP5-Yes, I feel so, and I need to change the motion a little bit to adapt to it.

PP6-I feel much easier to run on the tartan track than the cinder track, but I don't think it's necessary to renew the motions.

PP7-The tartan track is the best material for the competition, but I don't think it's necessary to change the motions.

PP8-Yes, I think there is differences, but I don't need to change the motions.

PP9-Yes, I think so.

PP10-Tartan of course is more springy and I always feel much faster than on cinders. The same motions though apply only the rhythm will change in running. The spikes I like best are the Nike's, with large spikes in the back and smaller ones in the front.

H1-Tartan--Better spring movements, Cinder--Gets "hard" in cold weather, and can easily bruise "heel".

H2-The tartan track reduces the shock to the legs. I think the motions are about the same, but because of the surface, these motions are easier and you can jump more often.

H3-I jump entirely on synthetic surface and have been for three years so I am used to all surfaces.

22. In your personal judgement, what are the major faults in technique or training that hold back the progress of many jumpers in your event?

L1-Too much technical work, bad running approach.

L2-"The mind" If you really believe, you can do it.

L3-No answer.

L4-Relaxation, Concentration, Personal pride in his or her own physical ability.

L5-Lack of speed and strength. Many jumper cannot sprint down the run-way and obtain a efficient take-off. I feel that the more speed I use the tartan I will jump--provide I've the training behind me.

L6-Not enough weight training, practicing the approach, slowing-up at the end of approach and getting to nervaous in competitions.

L7-By having a force training too often. By having not enough basic sprinting training. And too hard trying in the jump-action.

L8-1) Too much time lost, doing technical training. 2) Should do much more physical training, amelioration( improve ) of natural quality.

LL1-The major faults, I think, are depending on the slow approach running and not to get an full stretching of the take-off leg. This means that they can't get a good combination of the approach running and the take-off.

LL2-The fundamental error on revising the technique of the jumping is according to shift the body weight too fast on the lead leg. This is the result after the over concentration of mind to make a powerful kicking motion. I think that the taking off motion should be on the process of the running motion to pass the lead leg well, and then as doing so, "lifting-up" the body to project into the air. An ideal motion of the taking off should be as follows---the take-off leg must be placed on the ground from the heel and stretched.

LL3-Depending on a lack of speed of the approach running, and a less angulation of the take-off angle.

LL4-A lack of speed.

LL5-The major fault in the long jump is there at an combination between the approach running and the take-off.

LL6-It's depending on an un-appropriate run-up rhythm, and which means to drop the tempo during the final stage of the running approach, disconcentration at the final two or three steps toward the take-off, and dropping the hips at the taking off which means lack of active thrust from the hip.

- LL7-In an technical point of view; to drop the running speed at the most important stage where is the final stage of the approach running to link to the taking off.
- T1-In my case, the reason why I could not progress is specially; 1) No time, I did always participate the competition as a real amateur. One hour of training in a day. 2) To be alone. Speaking generally about jumpers, I think that they will progress the day when it will be athletes of my size who will run very fast and to have more time to allow them to train more than me.
- T2-Approach too slow.
- T3-Failure to gain complete balance on either leg, causing poor technique. Failure to gain sufficient take-off speed. They do not spend enough time completing interval sprint work-outs.
- T4-1) Lack of strength, 2) Inability to handle adverse conditions in competition.
- T5-1) Lack of strength for keeping up speed during step and jump. 2) Lack of balance( forward and backward rolling during jump ). 3) wrong landing position of legs during the flight-phase. 4) Wrong position fo legs during the flight-phase( should be 90 degrees ).
- TT1-The progress will be able to get agter leveling up the intensity of the training.
- TT2-They don't have much attention to develop the sprint speed.
- TT3-1) Lack of the sprint speed, and 2) Little "hop" in the triple jump.
- TT4-1) To improve the arm action during the jump. 2) An application of the VTR system. 3) To develop the rehabilitation facilities.
- TT5-Lack of sprint speed.
- TT6-No answer.
- TT7-It will be necessary to develop and to expand the training methods.
- TT8-The major fault is depending on one-side-development of the training, or lack of all-round training.
- TT9-1) Lack of the speed endurance. 2) Lack of the kick power at the take-off.
- TT10-1) Lack of the running speed in front of the take-off. 2) Little hop--the first jump of the triple jump.
- TT11-Lack of the speed at the first taking off. They must develop the speed which is necessary at the moment of the first taking off, hop, and then to develop the technique. It must be an correct technique.
- TT12-Too early to make athletes specialize to a triple jumper.
- P1-They are not so interested to do much running work-out. I guess too much weight lifting.
- P2-Not enough vaulting in training leading to less than perfect vaulting.
- P3-I can't answer to this question, it's too long. I believe that mistakes in the technique come in great part from 1) a lack of materials( including the pole, landing pit, etc. ), 2) afraid to take the higer part of the pole to grip, and 3) a little time to practice for the training.
- P4-Bad planting! Lack of speed upwards. In other words, they just "run into the box".
- P5-Many have a bad plans of training and many do not work on speed enough.
- P6-Technical mistakes; lack of grip of level. Mistake of training; too much training of jumps compare to the physical training.
- P7-1) Do not analyse vault. 2) Do not work on the important parts of the vault that are the run and the plant of the pole.
- PP1-The major fault is there at the beginning stage practicing of the technique; depending on the bad planting of the pole into the box, and the "penetration" to swing-up on the pole.
- PP2-Lack of good facilities for the landing pit.
- PP3-Incorrect use of all characteristics of the pole. Lack of impudentness.

- PP4-Lack of complete use of the characteristics of the pole, especially on its catapult or elasticity.
- PP5-In an technical point of view--correct sprinting motion, pole planting, and penetration. For the training method, I have not found out a general, and major fault now.
- PP6-Lack of vaulting speed.
- PP7-Too much of unusefull training.
- PP8-It's depending on the pole planting, penetration, and then shooting up.
- PP9-1) Bad approach running, bad pole planting, and bad penetration into the vault.  
2) Bad facility of the landing pit. 3)Building up the whole process of the training.
- PP10-Most vaulters have bad run-ups and so are not prepared for the take-off. This is the most common fault and I think the most important. Secondly, many vaulters try to swing to fast before penetrating.
- H1-Bad concentration.
- H2-I really don't know.
- H3-No one takes the time to completely learn the technique. But the most common fault is slowing down into the bar and leaning into the bar with the upper body.

23. What are your thoughts on the future of modern jumping of your event?  
Please write any comments!!

- L1-Beamon will certenly never beaten at the sea level. The progress will come from the physical preparation and not from the technique.
- L2-People must learn to believe in themselves, and long jumpers will reach more than 9.00 meters.
- L3-No answer.
- L4-With prepared training ideas gathered, the long jumper will advance to be the most competitive event in the track and field history.
- L5-Jumpers will jump tartan if they can convert their maximum speed into a fluid vertical speed.
- L6-I think the Flip jump should be tried.
- L7-Bob Beamon's world record will remain several ten years, but the level of the results in competitions will rise to 8.30-8.50m.
- L8-For the progress of the long jump, we should concentrate the training more and more on the speed of the running approach.
- LL1-There will be an 9.00 meters jump by the year of 2,000.
- LL2-I want to jump with 8.50m then want to make my student jump with 9.00m.
- LL3-It will be possible for me to make 3.5 steps striding from 2.5 steps in present form in the air of my long jump, after developing my sprint record of 100m-run within 12.0sec, so that I will be able to jump over 7.00 meters.
- LL4-To break through the 8-meters line.
- LL5-A female jumper will be able to break a 7-meters barrier in some near future. I have had an experience to perform of 6.98m in the long jump at an official meet, but it was an wind aided mark. For men's long jumper, I believe that someone will be able to mark 9-meters. The present world record of 8.90m by B. Beamon of the U.S.A., I am concidering, is not so much remarkable, but it should be an reasonalbe record for men's jumper. For example, N. Stekitch has jumped with 8.45m in spite of his less physical strength than Beamon's. However, as comparing him with Beamon, R. Boston, and I. Ter-Obanesian, it seems for me that N. Stekitch may have an possiblity to set an great new record in future.
- LL6-I believe that I will be able to jump over 6.70-6.80m, if I can get some progresses especially on the run-up speed, increasing the running tempo during

the final stage of the run-ups, and the correct motion of the hips and the lead leg at the taking off and in the air. For the general speaking, almost jumpers will be able to get an reasonable progress after the completion of the technique basically, which means to get an ability of building up the maximum velocity to make an correct taking off.

LL7-Passing for about four or five years, it's getting usual to mark 8.00-8.20m now. This means that it seems to be getting into an usual record with 8.30-8.50m soon. Beamon's present world record of 8.90m will be broken within five to ten years in the heigh altitude place.

T1-One day, one athlete will realize 18 meters in the triple jump. He will be big, very fast and very strong. He will have a technique who will allow him to realize 6.85( 38% )-5.30( 29.5% )-5.85m( 32.5% ) for the 18.00m.

T2-No answer.

T3-The ideal triple jumper in the future will be 185-190cm tall, weight 80-85kg, and be able to run 10"2 on 100m-duch and capable of heavy weight programmes. Flexibility will become more important--gymnastic ability will show out. He will be able to long jump over 8-meters on either leg.

T4-I think big improvements will occur within the next five years; perhaps even 18-meters.

T5-Before the world war II, the hop, step, and jump in Germany has not allowed for boys under 18. This is one of the reasons for the poor standard in this event. It takes about six years to develop strength and technique sufficien-try. So, athletes should begin at the age of 15. Otherwise their general physical climax does not meet their technique and experience. I had my best results at the age of 30 as an old man--of course regular medical treatment and control is necessary( not just repairing damages but as a "prophylaxe" ).

TT1-I have little hope because of my age.

TT2-I do want to be an Olympic medalist as developing myself through the training to jump over 17-meters certainly by the time of 1980.

TT3-It will be possible to achieve an 18-meters jump in 1980 to 1988.

TT4-I want to jump over 17.30m, and to run 100m with 10.4sec.

TT5-Yes, I do want to jump over 17-meters.

TT6-I hope to jump 17.50-17.70m in 1976.

TT7-My present aim is to break 17-meters barrier. I think that I must make much more efforts to progress of my last jump to do so.

TT8-To break the 17-meters.

TT9-I have been dreaming to be an Olympic medalist.

TT10-It will be possible to be marked 18-meters in future.

TT11-It will be possible to be marked 18-meters in future.

TT12-It seems to be possible to get an great progress on jumping to break the 19 meters line.

P1-The guys that will breake the world record in the future will jump as well as Isaksson did 1972 and run fast and rhythmic. Might be tole to.

P2-I feel that only one vaulter in the world has reached very close to his poten-tial, who will be Kjell Isaksson of Sweden. All of the others should improve greatly if we can perfectly utilize our speed.

P3-Evolution of the pole vault is practically tie to the evolution of the materials. Fiber-glass pole or some other materials.

P4-It will takes a long time to reach 19 feet or 5.80m. The pole will be( almost ) the same.

P5-There are yet things to improve. I haven't seen the perfect pole vaulter yet. I think it is possible to jump 5.80-6.00m.

P6-The jump of tomorrow will be done with a grip level of 5-meters, and with a revenue of one meter, we can then jump 6-meters. We must go faster during the running approach with more lighter, more nervous pole to realise that jump.

P7-The future of the vault lies in strength--speed work applied specifically to the take-off( with good technique at planting ).

PP1-The material of the pole will be developed further. Vaulters must learn effectively about the use of the pole. We should pay attentions to improve the lighter and better pole and the safty landing pit.

PP2-I want to achieve 5.60m vault to complete the technique.

PP3-I believe that it will be possible to vault of 5.80m, and which will be depending on whether he can select the model of the pole correctly.

PP4-The future vision is depending on the improvement of the materials of the pole.

PP5-It will be possible to be achieved 6-meters.

PP6-I hope to get a 5.70m vaulting.

PP7-For each vaulters, the most important object is not to be the first place of the meet, but to get an reasonable place or result for himself. My future vision must be depending on my future.

PP8-Achieving the 6-meters in the pole vault.

PP9-The most important factor to improve the record of the pole vault is depending on the development of a new pole. The new pole will require to change a technique and training methods time to time. It will takes quite a long time to get an 6.00 meters' vault, but not so much to get an 5.70-5.80 meters' vault.

PP10-I think the modern vaulter will be more of a sprinter and gymnast than he is today. He will have to develope his physique like the old vaulters on steel poles, so he can jump with his hands together. This will allow for a better penetration and swing plus a much better pull through( Look at Ripley! ). I also think that the poles will become lighter allowing far more speed and higher hand hold. I think that a take-off board, very big of course, would also be improved.

H1-The straddle will "shake the world" and hold the world record.

H2-The flop will take over the high jump.

H3-I believe more coaches will begin to learn to coach the flop correctly and other jumpers will start progressing at a rapid rate.

## DISCUSSION

1. Movement characteristics common to all jumps, and an attempt to define basic meanings.

All jumping events in track and field have a common characteristic in that they use the running approach. There is very wide difference between standing jumps and running jumps from both the mechanical and kinaesthetical points of view.

An analysis of the movement structure of the running jump shows that it is composed of a circular movement---the "run"---as the auxiliary movement and a non-circular movement---the "jump"---as the primary movement. Both of them exist as a continuum of movement in the strict sense of the term. In other words it is possible to understand the continuum as consisting of the run itself and its modification, the jump. The jump may be thought of as a transformation of the run, magnified for the purpose. Or, on the other hand, the run itself may be viewed as consisting of successive jumps intended to produce faster horizontal locomotion. Therefor the general movement characteristics of the running jump should be based on the rational, purposeful shifting of the direction of the horizontal momentum of the center of gravity. All movements in these performances should contribute to 1) obtaining the greatest horizontal momentum of the auxiliary movement that is appropriate to the subsequent primary movement and 2) obtaining the most effective landing( in the long and triple jump ) or bar clearance( in the pole vault and high jump ).

Naturally these elements exist in close relation as an organic continuum. Where problems arise we may isolate the cause by a phase-to-phase analysis.

Figure 4 shows an outline of the general movement structure of running jumps. Certain specific elements were not emphasized, for reasons in each event noted as follows:

**LONG JUMP**---The last phase of landing in the pit was neglected because over 90% of the performance, it is believed, would be decided by the preceding process ( the approach run ).

**TRIPLE JUMP**---The last phase of the pit landing was considered to be the same as that of the long jump. Strictly speaking we should consider that the triple jump is a continuum made up of the circular movement of the approach run and the "semi-circular" movement of the jumps. Therefor, the first prime movement---the "hop"---shown on figure 4 consists of three continuous phases; the preparatory, the prime, and the end. The first or preparatory phase of the hop must be considered as the latter half of the "intermediate phase" blended into one with the last phase of the running approach. The prime movements following the hop---the "step" and the "jump"---consists of a different semi-circular movement which presents a specific dynamic characteristic of the triple jump. In this phase the original running movement is modified through a transformation of the hop. The end phase of the hop and the preparatory phase of the step are blended into a new "intermediate" phase, vis-vis the step-to-jump phases.11), 13)

**POLE VAULT**---The pole itself should be considered as a figurative take-off leg in keeping with the nature of the movement, and in a similar way the body of the vaulter itself should be thought of as another leg; this gives us another specific dynamic characteristic of the pole vault. Also the final phase of the bar clearance is to be considered as a part of the end phase, a concept applied exactly the same as that of the high jump.

Hitherto the evaluation of movement in track and field has been done mainly by the quantitative method in considering speed, distance, strength, etc. Yet in the practical field of athletic activity the greater interest certainly exists in the qualitative contents of the movement which actually produce the results desired and which actually do say something about the movements themselves that may be of practical use. In the scientific field the greater concern also has been with quantitative analysis in imitation of the methodology of the natural sciences.

It seems that the qualitative evaluation and kinaesthetic presentation have not yet improved. The concept of qualitative evaluation was applied in a practical way to understand the basic nature of movement in the running jumps, used in this study with reference to the concepts of K. Meinel, who has defined it as one of the categories of the time-space components of the movement process.<sup>10</sup> In his study he provided seven other categories for making a systematization of the qualitative evaluations of movement: Harmony( Harmonie ), rhythm( Rhythm ), fluency( Flusz ), elasticity( Elastituet ), conduction( Uebertragung ), accuracy ( Genauigkeit ) and anticipation( Vorausnahme ).

In motor learning it was said that the identification of movements had been improved through the aid of kinaesthetic and language presentation based on Pavlov's first and second systems of signals. The latter language presentation given by well-known athletes seems to be very informative, especially on qualitative content of movement technique. That is, the statements produced by self-observation on the part of highly experienced athletes have greatly contributed to creation of a methodology of specific motor learning in practical fields.

## 2. Approach and technique.

### a) Approach distance and the check-mark.

The mean approach distance was 40.7m(  $s=3.554$  ) for all events excepting the high jump. This appears reasonable since many researches on the biomechanics of sprint running show that most experienced sprinters get their maximum velocity around the 40-50m mark while the less experienced reach maximum at about 30m. 1), 2), 3), 12) The simplest horizontal jump, the long jump, is a typical example of the sprint-jump in having a mean approach distance of 42.4m and a standard deviation of 1.920---which was the smallest value in the jumps. The other two relatively complex and technical events, the triple jump and the pole vault, have greater standard deviations( table 6 and 7 ). The reason for this may arise from the fact that it requires more relaxation and control for their execution.

The majority of Russian jumpers( reported in the second survey ) have their check-marks at 12-15m, or 6-7 steps before take-off; this is intended to begin the process of concentration and to build up leg speed for the last stage of the approach run---since the take-off motion should be the greatest magnification of the sprintmotion both in time and space, requiring an acceleration of movement. The answers to questions No.8a and 10 concerning preparation or cues seem to substantiate these facts. It is notable that not only the Russians but many other jumpers( in the first survey ) have similar check-marks. At this point it should be observed that there were few high jumpers in this study; it was said that the J-form approach run for the flop jumper is a "key" to successful jump but we actually need more data from highly experienced jumpers before drawing any conclusions.

There was no significant correlation between the approach distance and the starting style( No. 3 and 4 ) and also between the starting style and the build up method( No. 4 and 7 ). It was suggested that the approach distance, starting style and build-up method( only )should be just as the jumper sees fit; nevertheless, these phases were considered to be very great influence on following phases of movement.

### b) Technique.

The commonest difficulty in all approach runs for all events and for all individuals was the problem in the final stage of the approach run nearing take-off as shown in answers to questions 6, 8a, and 10, which was reported in such expressions as to "rhythm up," "tempo up," "gather up," and drive up". ( The answers to questions No. 11 and 12 also reflected these conclusions. ) In other words, the quality of the movement during the final stage of the approach run decisively effects the jumper's total performance. In consequence of this it seems proper that on the actual running field the qualitative appraisal, especially relating to movement rhythm, fluency, accuracy and anticipation of proper foot placement at take-off, should be done by the jumpers and coaches themselves rather than as the result of some quantitative evaluation such as motion or biomechanical study. It should be most desirable that any systematic imitation or simulation

of motion elements be developed directly from the practical field; as an example, table 16 shows a table of Russian triple jump technical work-outs( see also figure 5 ). 14)

For pole vaulters especially, who are required to make un-usual specific movements, there is a need for accurate simulation which based on information provided by experienced gymnasts and coaches.

The answers to questions on technical training( No. 14a and b and figure 1, 2, and 3 ) support the analysis of general problems previously given, involving the approach run, pop-ups, sprint work-outs, etc.

At this point it may be noted that while it seems most experienced jumpers have a private and personal internal image of their movements based upon kinaesthetic and neuro-muscular sensations, and these image might provide a very usefull and interesting insight on the movements involved, no information on the subject was received through this study. It seems clear that the questionnaire should be revised to record some of these images.

Taking the triple jump as an example, most books and illustrations show a pro formatic analysis of the jump divided into the approach( up to the first foot placement), the hop( up to the second foot placement ), and the step( to the third foot placement ), ending with the jump( to the final pit landing ). A typical example is shown in figure 6-(B). However, these presentations give us only a static, frame-to-frame, sectional image of the movement. A new and dynamic image is shown in figure 6-(A) which may be significant for improved analysis of motion. In this case the approach is includes the first take-off and ascent, the second step includes the following descent and actual second step, the third step includes the third step itself, the final ascent and the landing in the pit. The answers to question 14-b concerning rhythmical accent or the significant phase of the movement in the motion process supports this new analysis, as shown in figure 2. Another concept, that of the "depth jump"---the German "tiefsprung"---also adds support to this new view.

### 3. Training

#### a) Training methods

Questions 13a involved outlines of physical training( first survey ) and 13b concerned details in training( second survey ). Training schedules very reasonable put emphasis first on sprint training and then on muscle strength since the nature of the event hinges on this speed-strength factor. Practical jumping was third in emphasis; it appeared to be considered as a matter of practical technique. The answers to questions T2 in 13a and L5 in 14a were especially revealing in methods of practical execution.

The most remarkable thing in the Russian training method is the control-test system in which the special fitness test is incorporated in the training itself. Table 17 is covers an example of this relating to the triple jump which I obtained while visiting their Olympic training camp. I should be appreciated that this control test system has contributed a great deal to giving Russian athletes specific targets for each training schedule component, which is a highly effective factor in judging the progress and physical condition of the athlete during each step of the training process. It may be said that most of the specific means used by the Russians involved proven, "classical" methods but with some notable "new" solutions also.

#### b) Periodization and the training program

Research and practice in rational periodization and the organization of the training program is a highly important subject today, following the pioneer work of L. P. Matveev since the 1950's. 5), 7), 8), 9) This makes it clear that the factor which most influences the performance of the athlete is the organization of the whole year's training program including the arrangements for the competition. A. Krueger has re-examined Matveev's theories in a follow-up involving the performance of athletes throughout the Olympic year 1972. 4)

For this reason the survey raised questions about yearly training programs, a point not emphasized in the part. However, it is now clear that replying to



such questions would involve lengthy answers and elaborate detail quite beyond the scope of this modest survey, especially in the case where no detailed and specific written training program had been established. Yet the answers received tell us a good deal about the general organization of training as regards macro-periodization of the training year and the typical micro-periodization of each training interval. On the whole it was evident that the Europeans revealed a stricter periodization relative to the Americans. Differences in the competition period were revealed; Most Americans begin theirs in April and end in the middle of June while Europeans start in May or June and finish in September. They also have a winter competition period starting in January and ending in March---in effect a double training schedule for each year. The Americans did not consistently reveal such an outline. Australians schedules are the reverse of European due to their reversed climatic seasons.

Matveev's study tells us that unrestricted increases or decreases of activity during competition, or unrestricted extensions of the competition period, will obstruct the proper development of the athlete. This study did not produce data of volume sufficient to establish principles for a new rationalization of training programs. Clearly it will be necessary to develop a systematic and continuous field study and new methods of research.

#### 4. Miscellaneous

The first question of the second survey was designed to produce some indication from athletes and coaches as to what in their opinion were the factors leading to outstanding development. On a scale of 100, the responses gave a percentage of 38.6 to physical development, 31.8 to technical progress and only 19.5 to rationalization of the training program( see table 4 ). Recent investigation in this area has shown very clearly that a rational program is vital to the full development of any athlete's full potential. However excellent the performance of these athletes has been it is now clear that further progress can only be made by a comprehensive training program that takes into account the whole range of factors bearing on the athlete's training.

The second question was directed at the cause for injuries. Here again there was a clear indication. Over 70 percent of injuries fell in three familiar categories---muscle strain, sprain and bruises( see table 5 ). Most of the reasons for the injuries given involved problems in the training program. Again this suggests that far more attention should be given to organizing a rational program, for these problems themselves arise from situations that would not arise if they were following a properly rationalized program. Indeed, the prevention of injury is a primary reason for organizing a rational training program in the first place.

Answers to questions concerning major faults in technique and training generally corresponded to aspects already mentioned. Major technical faults involved the final stage of the approach run to take-off. Training problems discussed repeated the emphasis already noted---concentration first on sprint speed, second on muscle strength and finally on training rationalization.

#### CONCLUSION

1. The mean approach distance was 40.7m(  $s=3.554$  ) for all events excepting the high jump. The simplest horizontal jump, the long jump, had a mean approach distance of 42.4m and a standard deviation of 1.920---which was the smallest value in the jumps. The other two relatively complex and technical events, the triple jump and the pole vault, had greater standard deviations.

2. The majority of the subjects, especially of Russians have their check-marks at 12-15m, or 6-7 steps before take-off; this is intended to begin the process of concentration and to build up leg speed for the last stage of the approach run.

3. There was no significant correlation between the approach distance and the starting style, and also between the starting style and the build-up method.

4. The commonest difficulty in all approach runs for all events and for all

events and for all individuals was the problem in the final stage of the approach run nearing take-off.

5. The answers on concerning rhythmical accents or the significant phase of the movement in the motion process were suggested that a new and dynamic image may be significant for improved analysis of motion rather than a pro formatic analysis.

6. It may be noted that while it seems most experienced jumpers have a private and personal internal image of their movements on their technical training based upon kineasthetic and neuro-muscular sensations, and these images might provide a very useful and interesting insight on the movements involved, no information on the subject was received through this study. It seems clear that the questionnaire should be revised to record some of these images.

7. Training schedules very reasonable put emphasis first on sprint training and then on muscle strength since the nature of the event hinges on this speed-strength factor.

8. The most remarkable thing in the Russian training method was on the control test system in which the special fitness test had been incorporated in the training itself.

9. The Europeans revealed a stricter periodization relative to the Americans.

10. Differences in the competition period were revealed that the most Americans begin theirs in April and end in the middle of June while Europeans start in May or June and finish in September. They also have a winter competition period starting in January and ending in March.

11. The factors leading to outstanding development were responded on a scale of 100 due to physical development( 38.6% ), technical progress( 31.8% ), and rationalization of the training program( 19.5% ).

12. Over 70 percent of injuries fell in three familiar categories---muscle strain, sprain, and bruises. Most of the reasons to occur the injuries given involved problems in the training program.

#### ACKNOWLEDGEMENTS

The first series of the survey was accomplished through the kind cooperation of the Amateur Athletic Union of Australia, Confederacao Brasileiro de Desports, Ceskoslovensky atleticky svaz, Suomen Urheiluliittory, Federation Senegalaise d'Athletisme, Svenska Fri-Idrottsforbundet, the Amateur Athletic Union of the United States of America, and the Japan Amateur Athletic Federation, which gave me this opportunity to question their prominent jumpers. I greatly appreciate their assistance.

Regarding the second series of the survey containing the revised form of the questionnaire, I must first acknowledge the generous help of Mr S. Pavlov, the President of the Sports Committee of the USSR who gave me the opportunity to visit the training camp of the Russian national team in order to continue this survey, and note the further assistance of Chief Doctor A. Boiko, Mr V. Kreer, Mr G. Uzlov, and other trainers of the national team who were at the camp at the same time. Mr M. Oda helped me to revise the questionnaire. Professor K. Watanabe, Mr S. Morabito, and Mr G. Fortney aided me in solving some language problems. Mr A. Aoki, President of the JAAF, and Mr T. Mokudai, Secretary General of the Japan Olympic Youth Committee assisted in gaining access to Soviet Russia. Mr Y. Sato, former Chief Editor of the Track and Field Magazine, and other members of that magazine's staff have supported me in many ways.

Finally, I really wish to acknowledge the enormous efforts expended by all the jumpers who so very kindly answered my requests.

I really wish to extend this study to include the ideas and practices of all performers, athletes and coaches alike. I would be very happy to receive any information from you on this most interesting subject; comments, criticisms, descriptions of techniques, methods---anything at all which may add to our under-

standing of the jumping process.

All communications will be welcomed by:

Yukito MURAKI

c/o Institute of Sports Science,  
the University of Tsukuba.  
Sakura-mura, Niihari-gun,  
Ibaraki 300-31, JAPAN

Phone: 0298-53-2630(office)  
0298-51-5575( home )

#### LITERATURE

- 1) BALLREICH, R.(1969): Weg-und Zeit-Merkmale von Sprintbewegungen. Verlag, Bartels & Wernitz, Berlin.
- 2) GUNDLACH, R.(1963): Laufgeschwindigkeit und Schrittgestaltung im 100-m-Lauf. Theorie und Praxis der Koerperkulture, 3 254-269, 4 246-359, 5 418-425.
- 3) IKAI, M.(1968): Biomechanics of Sprint Running with Respect to the Speed Curve. Medicine and Sports-2, Biomechanics, 282-290, Kager, Basel/New York.
- 4) KRUEGER, A.(1973): Periodisierung und Selektion der Leichtathleten im Olympia-jahr. Leistungssport, 3-2.
- 5) MATBEEB, L. P.(1965): Problema Periodizatsii Sportibnoi Trenirobki. Moskba.
- 6) MATWEJEW, L. P.(1972): Periodisierung des sportlichen Trainings. Bertels & Wernitz, Berlin.
- 7) MATBEEB, L. P.(1974): Soberchenstbobanie Sistembi Podgotobki Sportsmnob( Problembi Postroeniya Trenirobki ). Moskba.
- 8) MATBEEB, L. P., et al(1975): Osnobbi Sportibnoi Trenirobki(I). Moskba.
- 9) MATBEEB, L. P., et al(1975): Osnobbi Sportibnoi Trenirobki(II). Moskba.
- 10) MEINEL, K.(1960): Bewegungslehre. Berline.
- 11) MURAKI, Y.(1971): The Movement Structure and the Development of the Technique in the Triple jump. Research Bulletin of the Tokyo Women's College of Physical Education, No.6( in Japanese )
- 12) MURAKI, Y.(1973): Various Changes of the Running Motion with Increase the Velocity during the Sprint-dush. Research Bulletin of the Department of Physical Education of the Tokai University, No.3( in Japanese )
- 13) KINBARA, I., MURAKI, Y., et al(1976): Track and Field Coaching(II)---Field Events, IV-Triple Jump, 175-268, Taishukan Publish Co.( in Japanese )
- 14) SANEEV, V. D.(1975): Stupeni k Pjedestalu, Fizkultura i sport, Moskba.

## TABLE CONTENTS

- Table 1. Personal profile of the subjects.  
Table 2. Personal best performances in various events.  
Table 3. Personal annual progresses in the specific event(in the second survey).  
Table 4. Statistics of the answers to the question No. 1 about the major reason of their remarkable progresses.  
Table 5. Statistics of the answers to the question No. 2 on the sports injury.  
Table 6. Approach distances and locations of the check-mark from the take-off board or spot. Answers to the question No. 3.  
Table 7. Statistics on the approach distance of the table 6.  
Table 8. The answers to the question No. 4 about the starting style employed in the running approach, and the statistics.  
Table 9. The answers to the question No.7 about the time to concentrate before the start of the trial.  
Table 10. Answers to the question No. 8 about the building up and its statistics.  
Table 11. Statistics of the answers to the question No.9 whether you are aware the take-off board or spot while you are in approaching, or not to do so.  
Table 12. Statistics of the answers to the question No.12 about the causes of doing over again the starts of the approach run in the trials.  
Table 13. Characteristics and the most desirable ratio of the triple jump; answers to the question No. 14b.  
Table 14. Characteristics, height and width of the hand grip of the pole vault; answers to the question No. 14b.  
Table 15. Numbers of competitions during the early, middle, and the late season of a year; answers to the question No.17.  
Table 16. Basic technical work-outs of the running triple jump.  
Table 17. Control tests for the triple jumper.  
Figure 1. Summaries of answers to the question No. 14b about the rhythmical accent, or the significant phase of the move in a series of the motion process of the long jump.  
Figure 2. Summaries of answers to the question No. 14b about the rhythmical accent, or the significant phase of the move in a series of the motion process of the triple jump.  
Figure 3. Summaries of answers to the question No. 14b about the rhythmical accent, or the significant phase of the move in a series of the motion process of the pole vault.  
Figure 4. An out line of the general movement structure of the running jumps.  
Figure 5. A simulation of the "rowing" action, showing active foot placement and the propulsion of the body on the supporting leg using the swinging movement of the arms and the free leg.  
Figure 6. Differences in analysis of motion on the triple jump for making up; (A) a dynamic image and (B) a pro formatic or static image.

Special tables on the basic training program throughout a year( answers to the question No.6 ) were listed in the following order of the subjects; L1, L4, L5, L6, L7, L8, LL1, LL3, LL6, LL7, T1, T3, T4, TT1, TT2, TT3, TT4, TT5, TT6, TT7, TT8, TT9, TT10, P1, P2, P4, P5, P7, PP1, PP2, PP3, PP4, PP6, PP8, PP10, H1, H2, H3. Another answers without a table are as follows: L2--My training differs in different years. Olympic year is different from any other year.

LL4--My training program is a variation based on the data from Professor L. S. Homenkov, USSR's honorable trainer.

P3--Training every day in a week. The training based on the speed 30, 40, and 100m. Running approach with the pole( relaxing in the running ). Muscle training( with heavy weight in the Gym ). Technique of the pole vault...work of piquet + impulsion.

P6--I don't have establish program. I train depending of the needs that I feel.

PP7--It's hard to answer this question. Because a training plan and the loads used to be changed depending of the conditions and the feeling. I usually have about 30-35 competitions in a year.

Table 1. Personal profile of the subjects.

Coad	Name	Nation	Year of birth	Age at start	Height (cm)	Weight (kg)	Best record
L1	BONHEME, J.	FRA	48	17	175	66	8.17
L2	BOSTON, R. H.	USA	38	15	187	74	8.35
L3	KLOCK, H.	GER	50	17	180	68	7.90
L4	LANIER, A.	USA	49	11	188	74	8.13
L5	ROBINSON, A.	USA	48	14	188	75	8.29
L6	SHINICH, P.	USA	42	12	193	82	8.33
L7	VAANANEN, A.	FIN	46	16	180	77	7.92
L8	VIX, A.	FRA	45	18	190	88	7.98
LL1	PEREVELZEV, A.	URS	49	17	190	80	8.00
LL2	PODLUGINY, V.	URS	52	16	176	68	8.20
*LL3	ZIDOVA, I.	URS	58	14	170	65	6.41
LL4	GALITSKY, U.	URS	50	16	181	69	7.71
*LL5	SHELKANOVA, T.	URS	36	--	170	62	6.73
*LL6	GAVRILOVA, N.	URS	49	16	165	55	6.31
LL7	SCHUBIN, E.	URS	47	16	186	76	7.98
T1	DIA, M.	SEN	39	23	192	84	16.83
T2	KLUGER, J.	GER	46	18	182	72	16.58
T3	MAY, P. J.	AUS	45	17	198	87	17.16
T4	MCGRATH, M.	AUS	46	16	175	70	16.68
T5	SAUER, M.	GER	40	18	183	78	16.77
TT1	BESSONOV, G.	URS	45	15	175	69	16.87
TT2	GRIGORIEV, N.	URS	54	17	186	76	16.06
**TT3	KREER, V.	URS	32	19	181	70	16.71
TT4	PISKLIN, A.	URS	52	16	176	74	16.81°
TT5	POSTNIKOV, V.	URS	54	17	190	83	16.78
TT6	SANEEV, V.	URS	45	19	188	78	17.44
TT7	SEGAL, M.	URS	52	16	171	64	16.74
TT8	SIDORENKO, S.	URS	47	19	181	74	16.63
TT9	SINICHIKIN, N.	URS	49	19	178	78	16.83
**TT10	UZLOV, G.	URS	27	--	165	60	15.20
TT11	BOR, B.	URS	47	18	181	73	16.41
TT12	NEMSOVSKY, P.	TCH	43	17	184	74	16.57
P1	BLOMQUIST, J. E.	SWD	44	17	185	71	5.28
P2	COTTON, M.	URS	50	15	182	73	5.35
P3	D'ENCAUSSE, H.	FRA	42	18	180	72	5.37
P4	ISAKSSON, K.	SWD	47	14	174	69	5.59
P5	LAGERQULST, H.	SWD	41	18	182	73	5.40
P6	LEFEBRE	SWD	51	19	170	65	5.20
P7	ROBERTS, D.	USA	50	11	189	81	5.65
PP1	BOIKO, V.	URS	52	15	185	72	5.43
PP2	ISAKOV, Y.	URS	49	15	183	80	5.45
PP3	KISHKUN, V.	URS	51	14	186	76	5.50
**PP4	ROSENFELID, V.	URS	32	17	175	75	4.45
PP5	PROHORENKO, Y.	URS	51	17	188	80	5.53
PP6	TANANIKA, E.	URS	51	15	187	78	5.40
PP7	TROFIMENKO, V.	URS	53	17	185	70	5.56
**PP8	VOLOBUEV, E.	URS	40	16	172	70	4.71
**PP9	YAGODIN, V.	URS	23	--	180	78	—
PP10	MOEERS, R.	USA	53	11	185	79	5.42
H1	BROWN, R.	USA	49	13	205	89	2.24
H2	MATZDORF, P.	USA	48	16	190	78	2.29
H3	STONES, D.	USA	52	9	196	82	2.30

cf)The initial letters on the coad number show their specific event: L(long jump), T(triple jump), P(pole vault), H(high jump); single letter in the first survey, double in the second survey. Official Olympic International Abbreviations of the names of countries were used. \*(female jumper); \*\*(trainer); °(marked 17.30m in this summer).

Table 2. Personal best performances in various events.

Subject	LJ	TJ	PV	HJ	100m	30m	40m	50m	110H
L1	8.17	-	4.20	1.95	10.6(10.2)	3.7(3.1)	4.7(4.1)	5.6(-)	-
L2	8.35	15.87	4.20	2.08	10.4(9.8)	-	-	-	-
L3	7.90	14.55	3.20	1.80	10.7(-)	3.6(-)	-	5.6(-)	-
L4	8.13	16.55	-	2.09	Y9.3(9.1)	-	4.3(4.0)	5.4(-)	-
L5	8.29	15.53	-	2.08	Y9.5(-)	-	-	-	-
L6	8.33	-	-	2.13	10.3(9.5)	-	-	5.2(-)	-
L7	7.92	-	-	-	10.3(-)	3.6(-)	-	5.6(-)	-
L8	7.98	-	-	1.90	10.6(-)	3.7(-)	4.6(4.0)	5.6(-)	-
LL1	8.00	15.52	3.80	1.97	10.6(-)	3.7(2.8)	4.7(3.8)	5.7(4.8)	14.8
LL2	8.20	16.29	-	1.95	10.4(-)	3.5(2.6)	4.5(-)	5.4(-)	-
*LL3	6.41	12.70	-	1.50	12.5(-)	3.8(3.2)	5.4(-)	6.7(-)	-
LL4	7.71	14.52	-	1.90	10.7(-)	3.8(2.9)	-	-	-
*LL5	6.73	-	-	1.72	11.6(-)	3.9(-)	4.9(-)	6.1(-)	-
*116	6.31	8.20	-	-	11.7(-)	4.2(3.1)	-	-	-
LL7	7.98	15.61	4.20	1.93	10.3(-)	3.8(2.7)	-	5.6(4.7)	15.1
T1	7.71	16.83	-	1.85	10.7(-)	3.9(-)	4.7(-)	5.6(-)	-
T2	7.58	16.58	-	1.85	11.0(10.0)	-	(3.7)	-	-
T3	8.19	17.16	-	2.04	10.3(-)	-	-	-	-
T4	7.65	16.68	3.85	2.03	10.8(-)	-	-	-	-
T5	7.70	16.77	-	-	10.6(-)	(2.8)	-	5.6(-)	-
TT1	7.50	16.87	-	1.90	10.8(-)	-	-	5.8(-)	-
TT2	7.40	16.06	4.00	2.05	-	(2.7)	(3.7)	5.8(-)	15.1
**TT3	7.16	16.71	-	1.75	10.9(-)	3.9(3.0)	-	5.8(-)	-
TT4	7.53	16.81	-	1.80	10.6(-)	3.7(2.6)	4.6(3.6)	5.7(4.6)	-
TT5	7.49	16.78	-	1.93	11.0(-)	3.9(2.9)	4.9(-)	5.9(-)	15.5
TT6	7.90	17.44	-	1.89	10.6(-)	3.6(2.8)	4.7(-)	5.7(-)	-
TT7	7.40	16.74	-	1.85	-	3.6(2.7)	-	5.6(-)	-
TT8	7.20	16.63	-	1.80	10.9(-)	(2.9)	-	5.8(5.2)	-
TT9	7.76	16.83	-	-	10.7(-)	(-)	-	5.8(-)	15.8
**TT10	7.27	15.20	3.60	1.85	10.6(-)	(2.6)	(3.7)	(4.7)	-
TT11	7.47	16.41	-	1.85	10.9(-)	3.7(2.8)	4.7(3.7)	5.7(4.7)	-
TT12	7.56	16.57	3.60	1.93	10.9(10.0)	3.7(2.8)	4.9(3.9)	5.8(4.9)	15.8
P1	7.03	15.11	5.28	2.00	10.7(10.0)	-	(3.9)	5.9(-)	-
P2	7.20	-	5.35	1.85	10.8(-)	-	(4.0)	5.8(-)	-
P3	7.50	-	5.37	1.92	10.4(-)	3.8(-)	4.8(-)	5.8(-)	-
P4	6.95	13.53	5.59	1.98	11.0(10.4)	(3.0)	-	-	-
P5	7.07	13.05	5.40	1.80	10.8(-)	-	-	-	-
P6	7.00	14.50	5.20	1.90	11.0(-)	3.8(-)	4.7(-)	5.6(-)	-
P7	-	-	5.65	-	10.7(10.0)	-	-	(5.0)	-
PP1	7.33	-	5.43	1.85	10.7(-)	3.7(2.7)	4.8(3.8)	5.8(4.8)	-
PP2	7.15	-	5.45	2.00	10.8(-)	3.8(-)	-	5.7(-)	-
PP3	-	-	5.50	1.90	11.0(-)	-	-	-	-
**PP4	6.69	14.17	4.45	1.65	11.4(-)	4.0(3.0)	-	-	-
PP5	-	-	5.53	2.05	10.7(-)	3.7(2.7)	-	-	-
PP6	7.36	-	5.40	1.90	11.0(-)	3.9(2.7)	4.8(3.7)	5.8(4.6)	-
PP7	6.80	-	5.56	1.90	11.0(-)	3.9(2.8)	-	-	-
**PP8	6.78	-	4.71	-	11.2(-)	3.8(3.0)	-	-	-
PP10	6.40	-	5.42	1.82	10.8(10.4)	-	-	(5.1)	15.5
H1	-	-	-	2.24	-	-	-	-	-
H2	-	-	-	2.29	10.9(-)	-	-	-	-
H3	-	-	-	2.30	-	-	-	-	-

cf) The figures bracketed are the sprinting records from the running start in each distance. \*(female jumper) \*\*(trainer)

Table 3 . Personal annual progress in the specific event( in the second servey ).

Coad	Name .. age...	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31		
LL1	Perevelzev.....					6.60	7.02	7.52	7.40	7.58	7.75	7.77	8.00	7.98	<u>8.21</u> ('76)						
LL2	Podluginy.....					6.78	7.56	7.87	7.78	8.11	<u>8.20</u>	8.17	8.12	8.14('76)							
*LL3	Zidova.....	5.06	5.67	5.99	<u>6.41</u> ('75)																
LL4	Garitsky.....					6.80	<u>6.95</u>	7.00	7.05	--	7.10	7.10	7.38	7.46	7.71	<u>7.76</u> ('76)					
*LL5	Schelkanova.....										6.06	6.36	6.56	<u>6.62</u>	6.68	6.62	6.71	<u>6.73</u> ('64)			
*LL6	Gavrilova.....					5.10	5.95	--	--	6.24	6.29	--	--	--	6.28	<u>6.31</u> ('75)					
LL7	Schubin.....					5.41	6.84	7.02	7.24	7.33	7.38	7.44	7.59	7.51	7.65	<u>7.63</u>	<u>7.98</u>	7.75	7.77('76)	( '76)	
TT1	Bessonov.....	12.50	13.70	14.70	14.94	15.25	--	14.30	16.11	16.34	16.50	16.40	<u>16.87</u>	16.82	16.50	16.50	16.78	16.52			
TT2	Grigoriev.....					14.80	<u>16.06</u>	--	15.85	15.95('75)											
*TT3	Kreer.....					13.65	14.66	14.70	14.84	15.42	16.02	16.00	16.43	16.46	16.49	<u>16.71</u>	16.45('62)				
TT4	Pisklin.....					13.76	14.44	15.22	16.02	16.56	16.32	16.64	<u>16.81</u>	16.71('76)							
TT5	Postnikov.....					14.90	15.55	<u>15.78</u> ('75)										( '76)			
TT6	Saneev.....					13.30	14.88	15.78	15.80	--	16.63	17.39	17.35	17.20	17.16	<u>17.44</u>	17.13	17.23	17.33	17.29	
TT7	Segal.....					13.17	14.98	15.77	16.28	16.70	<u>16.74</u>	16.68	16.13('76)								
TT8	Sidorenko.....					13.72	14.91	15.02	<u>15.33</u>	15.63	16.11	16.01	16.17	<u>16.63</u>	16.47('76)						
TT9	Sinichikin.....					15.11	15.48	15.89	16.01	16.57	16.76	<u>16.83</u>	16.68	<u>16.54</u> ('76)							
TT11	Bor.....					12.23	13.51	14.20	14.77	15.20	15.75	15.90	<u>16.11</u>	16.21	16.38	<u>16.41</u> ('75)					
TT12	Nemsovsky.....					14.11	14.80	14.87	15.47	15.85	16.22	16.29	<u>16.57</u>	--	16.15	16.20('70)					
PP1	Boiko.....					3.20	3.90	4.40	4.72	5.02	5.15	5.20	5.21	<u>5.43</u>	5.40('76)						
PP2	Isakov.....					2.40	3.20	4.10	4.40	5.02	5.20	5.10	5.36	<u>5.30</u>	5.41	5.40	5.40	<u>5.45</u> ('76)			
PP3	Kishkun.....					2.90	3.40	4.00	4.60	4.90	5.00	5.02	5.20	5.24	5.40	5.45	<u>5.50</u> ('76)				( '64)
*PP4	Rosenfeld.....					3.60	3.60	3.90	4.00	4.20	4.20	<u>4.30</u>	4.41	4.42	4.40	<u>4.45</u>	4.30	4.30			
PP5	Prohorenko.....					3.20	4.25	4.70	4.90	5.05	5.00	5.10	5.37	<u>5.53</u> ('76)							
PP6	Tananika.....					4.00	4.25	4.40	4.40	4.70	4.90	5.20	5.35	5.30	5.30	5.20	<u>5.40</u> ('76)				
PP7	Trofimenko.....					4.60	4.90	5.25	5.32	5.37	5.46	<u>5.56</u> ('76)									
*PP8	Volobuev.....					2.80	3.80	3.80	4.00	4.10	4.10	4.20	<u>4.30</u>	4.40	4.60	<u>4.71</u>	4.40('67)				
PP10	Mooers.....					2.44	3.35	3.86	4.16	4.62	4.91	5.07	5.18	5.40	<u>5.42</u> ('76)						

cf) \* means a female jumper, and \*\* means a trainer. Each record with the under-line is the personal best record in his career. The figure bracketed is the last year of the record marked.

Table 4. Statistics of the answers to the question No.1 about the major reason of their remarkable progresses.

Major reasons of their remarkable progresses	%
1) Physical development.	38.6
2) Technical progress.	31.8
3) Rationalization of the training programme.	15.9
4) Others (will, progress in sprinting, improvement of the materials.)	13.6

Table 5. Statistics of the answers to the question No.2 on the sports injury.

Sports injury	%
1) Muscle strain	47.8
2) Sprain	21.7
3) Bruise	10.9
4) Neuralgia	8.7
5) Dislocation	4.3
6) Others	6.5

Table 6. Approach distances and locations of the check-mark from the take off board or spot. Answers to the question No.3.

In the first survey			In the second survey		
Subject	Approach distance	Location of check-mark	Subject	Approach distance	Location of check-mark
L1	40.0m	15.0m	LL1	44.0m	14.5m
L2	44.3	-	LL2	42.5	13.8
L3	43.5	-	*LL3	33.35	-
L4	38.6	-	LL4	43.0	13.0
L5	44.2-45.7	23.0	*LL5	38.0	-
L6	40.8	24.7/7.3	*LL6	36.0	11.0
L7	40.2	-	LL7	43.5	14.3
L8	43.5	-			
T1	45.0	-	TT1	45.0	-
T2	35.0	-	TT2	39.0	24.0
T3	45.1	-	TT3	38.0	13.0
T4	49( walking stride )	-	TT4	41.8	12.0
T5	37.0	-	TT5	37.0	13.5
			TT6	43.5	14.5
			TT7	38.0	-
			TT8	41.4	-
			TT9	43.0	12.3
			TT10	42.0	13.0
			TT11	42.0	13.0
			TT12	40.6	26.5
P1	41.2	16.4	PP1	41.5	16.5
P2	36.3	-	PP2	37.0	-
P3	40.0(8th, 14th, 20th-mark)	-	PP3	43.0	25.0
P4	45.0-48.0	31.1/16.0	PP4	43.5	15.0
P5	43.0	39.3/16.3	PP5	39.0	-
P6	32.0+a	-	PP6	36.5	-
P7	42.0	-	PP7	41.0	-



Table 6 . ( Continued )

Subject	Approach distance	Location of check-mark	Subject	Approach distance	Location of check-mark
			PP8	30.0	-
			PP10	35.91	16.30
H1	12.7	-			
H2	14.4	-			
H3	19.8	-			

cf) \* shows the female athlete.

Table 7 . Statistics on the approach distance of the table 6.

Event	n	$\bar{x}$	s
Long jump	12	42.4m	1.920
Triple jump	16	40.8	3.075
Pole vault	16	39.3	4.253
Total	44	40.7	3.554

cf) The data on the high jumper were excluded because of its small numbers. The data of T4 and three female long jumpers marked with \* on the table 8 were also excluded.

Table 8 . The answers to the question No.4 about the starting style employed in the running approach, and the statistics.

Starting style	Subject and comments
1) Standing on both feet. ( 8.0% )	P1, P5, H1, and LL1
2) Split style. (52.0% )	L2, L3, L4, L6, L7, T3, T5, P1, H2; LL2, LL3, LL4, LL5, LL6, LL7, TT1, TT4, TT8, TT10, PP1, PP2, PP4, PP7, PP8, PP9
3) Stepping on the spot. (14.0% )	T1, P7; TT2, TT5, TT7, PP3, PP6
4) Others (26.0% )	L1-Start with two steps walking. L5-Combination of 1) and 2). T2-Three steps walk to the first check-mark. T4-Jogging on the spot. P3-Walking two steps. P6-To pass on the mark. H3-Push off. TT6-With 3-4 steps of walking. TT9-Combination of 2) and 3). TT11, TT12, PP5-I used to start with small steps of running during the initial stage of the run-ups. PP10-From the split style, I used to begin with 4 steps jogging to fit my foot to the first check-mark.

Table 9 . The answers to the question No.7 about the time to concentrate before the start of the trial.

Subject	Time(sec.)	Subject	Time(sec.)
LL1	30-40	TT10	10-20
LL2	10-30	TT11	10-15
LL3	90	TT12	60
LL4	10-15	PP1-According to conditions	
LL5	30-120	PP2	30
LL6	30-40	PP3	30
LL7	60-120	PP4	30
TT3	20-30	PP5	30
TT4	60	PP6	60
TT5	30	PP7	60
TT6	15-20	PP8	60
TT7	10-15	PP9-Wait till to begin the excitement.	
TT8	10-15	PP10	30
TT9	Short time		

Statistics; n=24,  $\bar{x}$ = 33.85sec., s= 20.615

Table 10. Answers to the question No.8 about the building up and its statistics.

Building-up methods	Subject and the opinion
1)Steep acceleration from the beginning with a slightly shortened stride to get maximum pitch almost the 6th step from the start. ( 23.1% )	L2, L6, T5, P6; LL5, LL6, TT4, TT9, TT12, PP3, PP6, L5-My building up is very slow, so I start out at 100% effort. By the time I reach the board, I am at the maximum speed. I sprint off the board.
2)Easy acceleration, lengthening the stride almost two meters in early stage, and building up the pitch gradually. ( 38.5% )	<p>T1-I accelerate progressively until the board by suing my check-mark.</p> <p>T3, T4, P1, H1,</p> <p>P3-Acceleration gradually to reach the maximum speed with a control on the last 6 steps.</p> <p>P4-Easy acceleration until around 20 meters being left, then maximum speed without thinking of my steps.</p> <p>P5-Try ro force myself not to build up maximum speed too soon. I try to run relaxeal with high knees to my second check-mark, and go from there to the pit. Because I want to reach my maximum speed right before the take-off.</p> <p>P7-Run naturally, building all the way through the run.</p> <p>H2-Easy acceleration at the beginning, building up strongly toward the end.</p> <p>LL3, LL4, TT2, TT3, TT5, TT6, TT8, TT10, TT11, PP7</p>
3)Mixed method with above two, building up the pitch and lengthening the stride gradually. ( 21.2% )	<p>L1, L3, L7, T2, H3, TT1, PP1, PP4, PP9,</p> <p>PP2-But, finally run-up with high speed toward the take-off.</p> <p>PP10-Push hard and touch down fast the foot at the start, the strides maybe shortened than usual.</p>

Table 10. ( Continued )

Building-up methods	Subjects and opinions
4)Others( 17.3% )	<p>L4-Steep acceleration at beginning, five steps, relaxing into the board with control speed, high knee action throughout approach. It is my habit developed from six years of daily approach running.</p> <p>L8-I do my running approach by accelerating my speed progressively to reach the last five meters with the biggest acceleration possible.</p> <p>P2-Try to accelerate each step until reaching maximum speed at the take-off.</p> <p>LL1-Basically same as 1), but during the final six steps, I used try to make up running tempo fast and to have stride running.</p> <p>LL2,</p> <p>LL7-Fastly and freely at the beginning and then smooth and stride running at the middle atage, and finally, build-up the tempo from the check mark.</p> <p>TT7-Buildingup...Free running( coasting )...Building up again.</p> <p>PP5-Making even build-up, and keeping the running speed at the final stage( 10-15m toward the take-off point ) to get into the pole setting.</p> <p>PP8-Easy acceleration with an easy build-up running.</p>

Table 11. Statistics of the answers to the question No.9 whether you are aware the take-off board or spot while you are in approaching, or not to do so.

Answers	Percentage
Yes	64.3%
No	35.7%

Table 12. Statistics of the answers to the question No.12 about the causes of doing over again the starts of the running approach in the trials.

Reasons	Percentage
1) Change of wind.	33.0%
2) Collapsed the rhythm.	20.2
3) Lack of concentration.	13.8
4) Bad acceleration.	12.8
5) Missed the check-mark.	7.5
6) Others.	1.1
7) Never doing over again.	13.8

Table 13. Characteristics and the most desirable ratio of the triple jump; answers to the question No.14-b.

Subject	Arm action in the triple jump	The most desirable ratio(%)
TT1	Natural arm action	35.8-29.5-36.7
TT2	Double arm action	36.3-32.5-31.3
TT3	Double arm action	38.3-29.9-31.9
TT4	Double arm action	36.3-29.8-33.9
TT6	Double arm action	37.8-28.5-33.7
TT7	Double arm action	38.5-29.8-31.6
TT8	Natural arm action	35.5-30.8-33.7
TT9	Double arm action	35.3-29.9-34.8
TT10	Natural arm action	37.2-30.6-32.2
TT12	Natural arm action	37.3-30.1-32.5

Table 14. Characteristics, height and width of hand grip of the pole vault; answers to the question No.14-b.

Subject	Characteristics of vaulting	*Height	Width	Pole
PP1	-----	4.83m	70cm	Pacer III
PP2	-----	4.85	60	Pacer III
PP3	"Mixed vaulting method"(swing type + strength type).	4.70	60	Cata+580
PP4	Swing type.	--	--	--
PP5	-----	4.88	60-70	Catal95
PP6	-----	4.70	65	Catal85
PP7	Fast swing-up and good turning on the pole, and concentration of the power for vaulting,	4.70	60	Cata
PP8	-----	4.52	60-70	--
PP10	1) I don't penetrate with my shoulders, but instead they begin to comeback here( the number of the head is the same as noted on the illustration and so forth). 2)My knee stay bent and my left arm straighten out a little here. The rest of the vault is good but in-efficient at the top. 3)The hips should be continuing back at this point with the legs straight up the pole. Also the vaulter should keep his feet together on top for control.	4.60	60	Pacer III

\* Grip height means the effective grip height from the surface of the run-way ( or top of the box ) to the upper grip level.

Table 15. Numbers of competitions during the early, middle, and the late season of a year; answers to the question No.17.

Subject	During the early season	During the middle season	During the late season
LL1	7( during the winter season ), 8-10( during the summer season )		
LL2	3	3	2
LL3	5	3	8
LL4	10-15	15-20	10-15
LL5	10	8	6
LL6	5	5-6	3-4
LL7	5-7	10-15	5-7
TT2	2-3	3-4	2
TT3	Once a week during the first half, and once in two weeks during the last half of the season.		
TT4	2	3	3
TT5	12-14 during the whole competition period.		
TT6	4-5 during the first half, 6-7 during the last half.		
TT7	3-4	2-3	2-3
TT8	1-2	3-4	5-6
TT9	0	3-5	13-20
TT10	Once a week during the first half, and once in two weeks during the last half of the season.		
TT11	12	10	8
TT12	4	8	6
PP1	3	4	3
PP2	4	5	2
PP3	3	2	2
PP4	2	2	2-3
PP6	3	4	3
PP7	10-13	5-10	10-13
PP8	3	5	3
PP9	4-6	2-3	4-6
PP10	4	4	4(but usually more)

Table 16. Basic technical work-outs of the running triple jump.

Work-out	Method	Instruction
1)"Step" work	-Successive jump with a leg alternately on the stairs, hills, benches, etc; keeping the thigh high and rotating the arms. Try to do in various ways.	Try to keep jumpings about 30m with 2.30-2.50m step length; including the jumping on the sund.
2)"Hop" work	-Same as in the step work, but jumping with the same leg. Noticing not to have a braking action with the take-off foot, but to stretch forward as far as possible.	Continue about 30m with 2.30-2.50m step length.
3)"Rowing" work (Imitation)	-Lift up the thigh, and swing the lead leg to kick forward strongly (See the figure 6).	Key point of the rowing exercise is on the acceleration at the final stage of the kick. The direction of the kick is not upward, but forward.
4)Development of a sense of the kicking.	-Depth jumping from the box of 40-45cm high. Take off firstly with the take-off leg or the opposit leg on the box, then take off with the same leg on the ground(step), and then take off again with the other leg(jump). Landing into the pit.	Noticing mainly on the timing of the take-off. (90cm for the master class)
5)Development of jump power.	-Do the step work and the hop work over 30m within 10 steps. Repeat it and take the imitation work of the rowing action inbetween this works.	Start from 6-7 steps run ups.
6)Combination exercise of the triple jump.	-Repeating the connections such as "hop+step", "step+jump", and "step+hop" from 6-7 steps run-ups.	Landing into the pit with the feet during the "step+jump" work. Run through after the final take-off during the other exercises.
7)Learning of the basic movement of the triple jump and strengthening the "hop".	-One leg triple jump( firstly only with the take-off leg, and then with the opposite leg) from 6-7steps run-ups.	Notice to get the perfect "rowing" action at the take off to use the springy leg action. Don't hurry up the kick.
8)Learning the whole successive movement of the triple jump from the short approach run.	-Triple jump from 6-7 steps run-ups. Try to make the flat and long path of the jump.	Better to do it on the lawn or the similar elastic surface.
9)Learning the triple jump rhythm.	-Triple jump with marks from 6-7 steps run-ups.	Check the marks; 4.50+3.50+4.00 for 12m, 4.75+3.75+4.50 for 13m, or 5.00+4.00+4.50 for 13.5m.
10)Approach running	-Practice on the first half(with 3/4 of the maximum speed) x 2, -Practice on the last 5steps toward the board about 10m, from easy and springy additional sub-approach x 2, -Jump over 5-medecin ball placed on 140-150cm inbetween from 15-20m approach x 2, -Build-ups with approaching rhythm x2, -Complete approach running x 2.	Decide the approach distance depending on the mastering the jump. It must be enough for the beginners to take 12-13 steps approach distance.

(Continue)

Table 16.( Continued )

Work-out	Method	Instruction
11)Completion of the "hop" and the connection from the approach running.	-Take off with fast and flat lead leg action from 6-13 steps run-ups. Hop works from 6 steps run-ups and then 8-13 steps. Consider to be able to make the "rowing" action of the swing leg with a good timing at the initial stage of the hop.	Landing into the pit with a leg.
12)Learning the triple jump in a high speed	-Triple jump from 6, 8, and 10 steps run-ups, then from a full approach distance.	Desirable to practice on the lawn or the similar springy surface.
13)Complete triple jump in the competition.	-Make a full trials in the competition, trying to make a flat and long path of the jump from the speedy approach running.	

Table 17. Control tests for the triple jumper.

Test Events	Standard marks								
	12.50	13.50	14.50	15.50	16.00	16.50	17.00	17.50	
1)50m dush(sec.)	6.6	6.4	6.2	6.0	5.8	5.7	5.6	5.5	
2)Long jump(m.)	6.00	6.30	6.80	7.00	7.20	7.50	7.70	8.00	
3)150m dush(sec.)	19.0	18.3	17.8	17.0	16.5	16.2	15.9	15.7	
4)Long jump from 10steps approach(both feet).	-TOF-	5.40	5.50	6.30	6.50	6.70	7.00	7.15	7.50
	-OPF-	5.10	5.20	5.85	6.20	6.30	6.50	6.65	7.00
5)Triple jump from 10 steps approach run(m.)	12.50	13.20	14.00	14.80	15.20	15.60	16.20	16.60	
6)5-hopping from 7 steps approach(both feet)	-TOF-	18.00	19.00	20.50	22.00	22.50	23.00	24.00	24.50
	-OPF-	17.50	18.00	20.30	21.30	21.80	22.50	23.50	23.50
7)Depth triple jump from 50-90cm high with 2 steps app.	9.00	9.50	10.00	10.50	11.00	11.30	11.70	12.00	
8)5-full squatting with 60kg. ( time=sec. )	9.5	8.0	7.0	6.0	5.5	5.0	4.8	4.5	
9)Maximum barbell clean(kg.)	---	75	86	95	105	117.5	125	130	
10)Double handed shot put with 7.257kg(m.)	-Back-	9.50	11.50	13.00	14.50	15.50	16.00	17.00	17.50
	-Forw-	9.00	11.00	12.50	13.50	14.50	15.00	15.50	16.00

cf) Abbreviations in the table are as follows: -TOF- means to jump with a take off foot, -OPF- means to jump with the opposite foot, -Forw- means to throw a shot forward in front of the body, and -Back- means to throw it backward over the head.

LL3.....

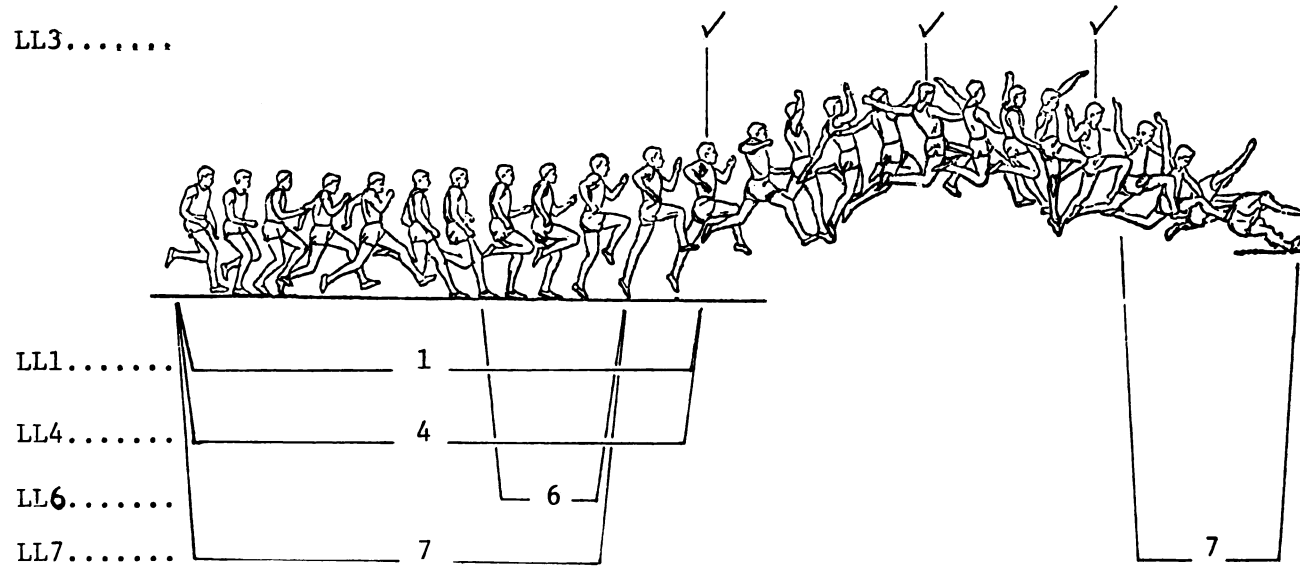


Figure 1. Summaries of answers to the question No.14-b about the rhythmical accent, or the significant phase of the move in a series of the motion process of the Long jump. Numbers in the figure relate with the subject's number.



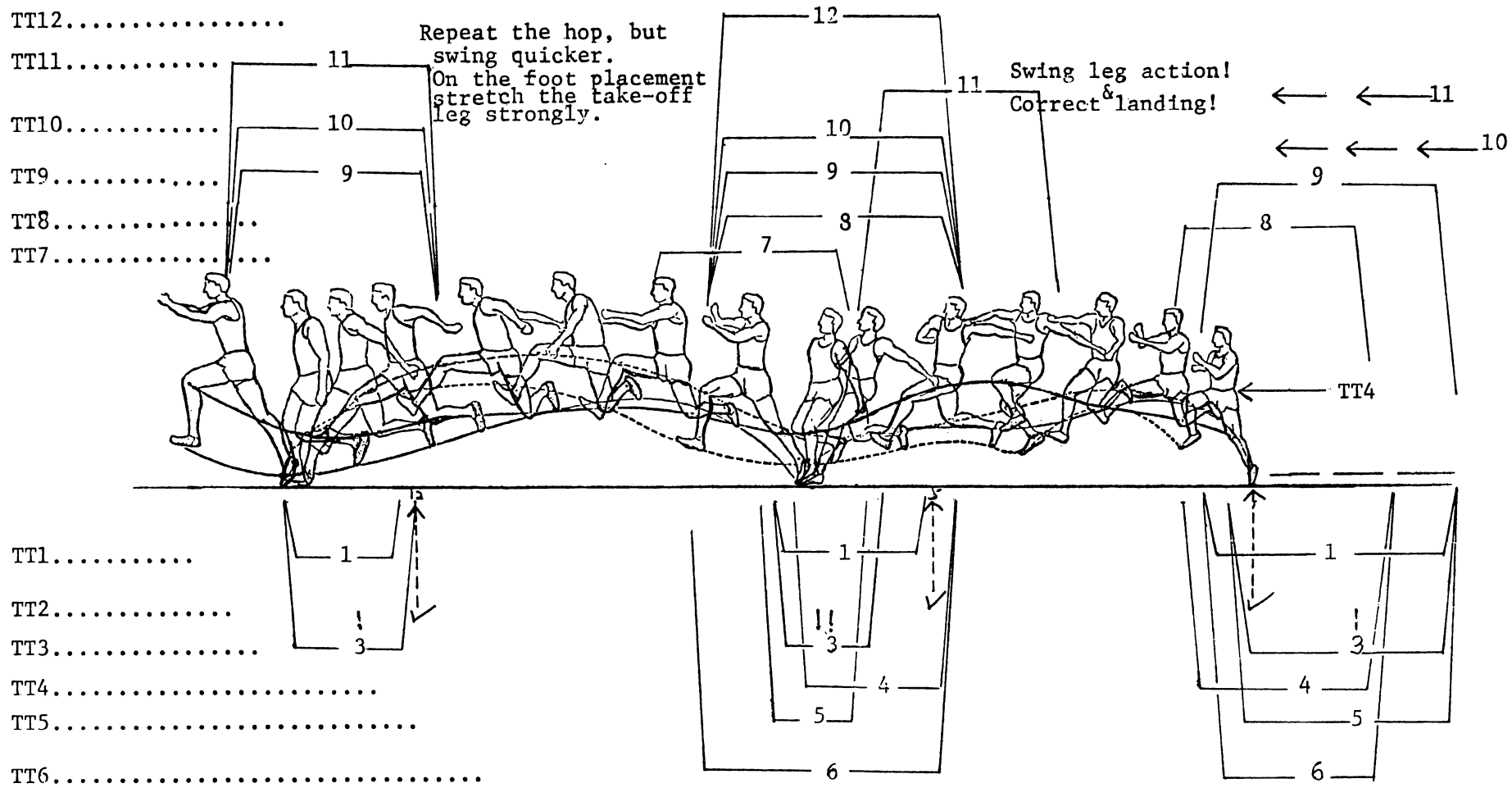


Figure 2. Summaries of answers to the question No.14-b about the rhythmical accent, or the significant phase of the move in a series of the motion process of the triple jump. Numbers in the figure relate with the subject's number.

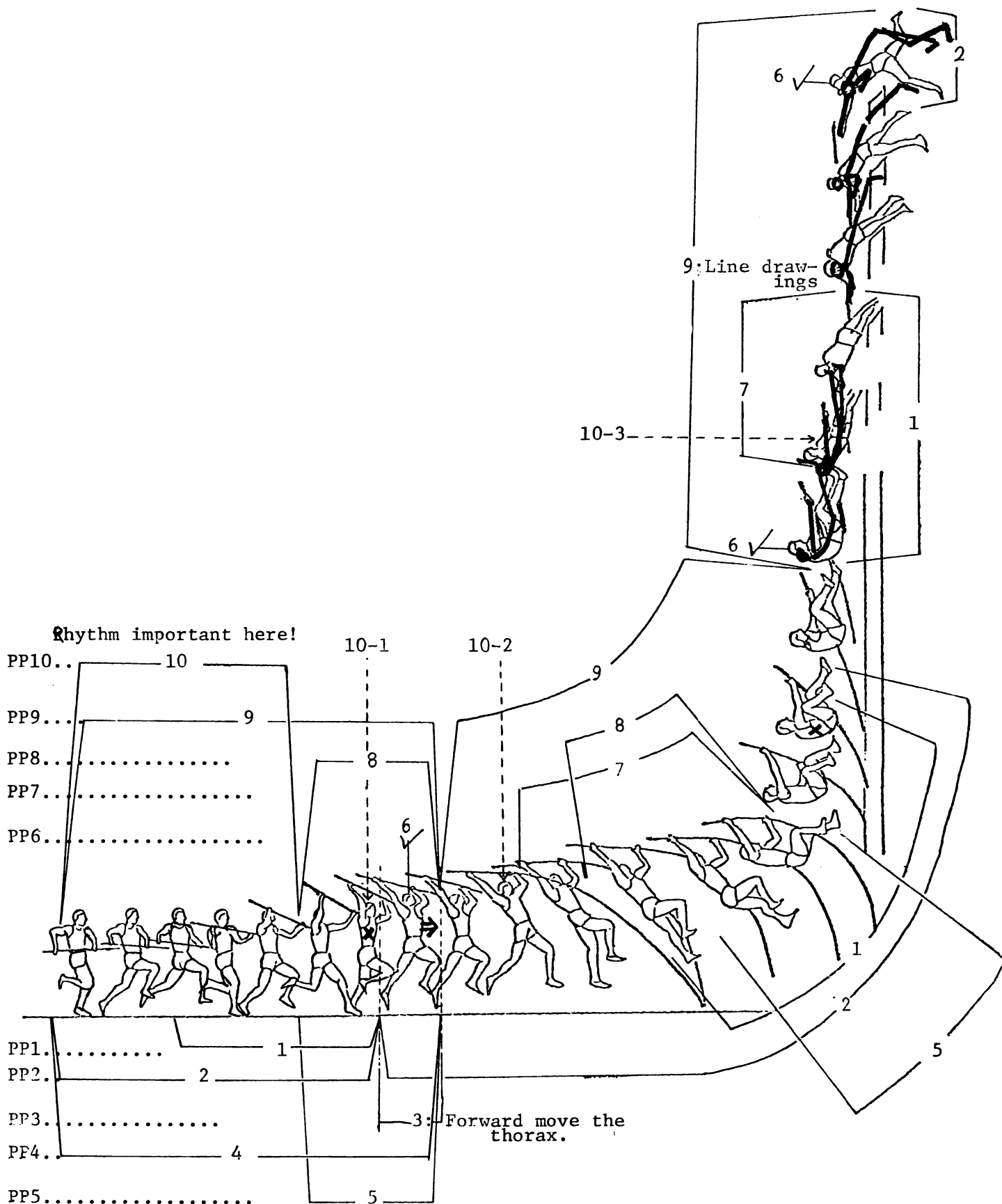


Figure 3. Summaries of answers to the question No.14-b about the rhythmical accent, or the significant phase of the move in a series of the motion process of the pole vault. Numbers in the figure relate with the subject's number.

Running jump					
Auxiliary movement( running )			Prime movement( jumping )		
Circular movement			Non-circular or Semi-circular movement		
Approach running			Jumping( take-off )		
Main phase	Intermediate phase	Main phase	Special intermediate phase	Main phase	End phase
First half	Latter half	End phase	Preparatory phase	First half	Latter half

Fig. 4 Out line of the general movement structure of running jumps.

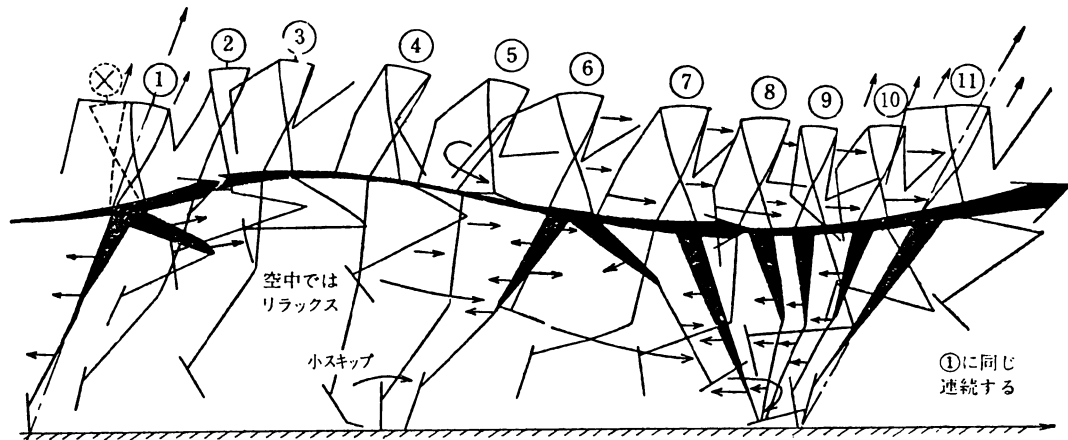


Fig. 5 A simulation of the "rowing" action, showing active foot placement and the propulsion of the body on the supporting leg using the swinging movement of the arms and the free leg. When simulating this action vary the speed, height, and length of movement from easy to difficult.

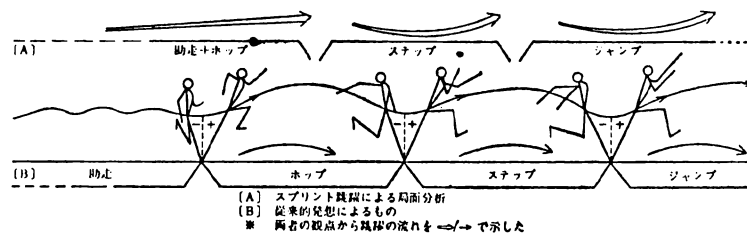


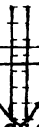
Fig. 6 Differences in analysis of motion on the triple jump for making up; (A) dynamic image and (B) pro formatic or static image.

SUBJECT: L1 \_\_\_\_\_ [[Basic training programme through-out a year( Answer to the question No.16. )]]

Month	10	11	12	1	2	3	4	5	6	7	8	9
Periodization	PREPARATION PERIOD						COMPETITION PERIOD					
	GENERAL PREPARATION PERIOD			(Indoor-season) SPECIAL PREPARATION PERIOD			I			II		
Mon	Rest			Jogging			Cross Country Long-running; 6 x 150			Speed-running; 60-80-100		
Tue	Weight Training			Long-running; 6 x 200m			Weight Training			Weight Training		
Wed	Technique			Technique			Technique			Technique (Running-approach)		
Thu	Long-running			Weight Training			Sprint-running			Power Training		
Fri	Bench-work + Gymnastics			Sprint-running			Power Training			Sprint-running		
Sat	Jogging			Rest			Rest			Rest		
Sun	Volly-ball			Competition			Competition			Competition		
Number of meet	0	0	0	←----- 6 -----*			9 -----*			11 -----*		

SUBJECT: L4

[[Basic training programme through-out a year( Answer to the question No.16 )]]

Month	10	11	12	1	2	3	4	5	6	7	8	9
Periodization	OVER-DISTANCE PERIOD (General Preparation Period)			COMPETITION PERIOD: Speed work-out daily-- Short distances; 220's-150's-100's-50's(No clock)								Transition Period (Full-stop)
	 Over distance; daily 3-4 miles.			Indoor Season				Outdoor Season				
Mon							-1 mile warm-up -100yrd speed build-up x 10 -High knee drills -Step-hop drills; steps				-4 x 440yrd: Speed timed 49-53sec. -2 mile warm-down + 20 times approach-running	
Tue				-1 mile warm-up -High knee drills -5 x 10 hurdles -10 x 100yrd build-ups				-5 x 220yrd( 23"-27" ): half lap rest -20 times approach running -2 mile warm-down + Weight training				
Wed				-1 mile warm-up -High knee drills -20 x Approach-run				-6-9 pop-ups: Technique in wind -1 mile warm-down				
Thu				Total resting day								
Fri				Competition day								
Sat				2 mile jogging---slow								
Sun				Rest								
Number of meet	0	0	1	4	4	4	5	4	4	5	3	1

SUBJECT: L5

[[Basic training programme through-out a year( Answer to the question No.16 )]]

Month	10	11	12	1	2	3	4	5	6	7	8	9	
Main-work	weight	weight	weight	Indoor/weight	Indoor/Weight	Hard-run/running	Jump-hard/run	Peaking to meet	Maximum-jump	Rest	Rest	Rest	
Periodization	* PREPARATION PERIOD( Oct. to Feb. )					COMPETITION PERIOD				TRANSITION PERIOD			
	General preparation period			Special P.P.(indoor)		March to 3rd week of April				April-May-June			
Main-work	1st. Week	2nd. W.	3rd. w.	4th. w.	Main-work	1st. week	2nd. w.	3rd. w.	4th. w.	1st. w.	2nd. w.	3rd. w.	4th. w.
Mon	Weight	Weight	Weight	Weight	SPECIAL ENHANCEMENT	3 x 330 Hurdling	1x330 1x220 1x150 1x120 1x100 1x75 1x60 1x50 1x35 1x25 HURDLES	4 x 220 Hurdling	330-100, 50-50-100 220-330, Hurdling	Hurdling 6 x 150	Fartlek Hurdling	10 x 100 Hurdling	330-220-100 50-25-25 50-100-220-300, Hurdling
Tue	4 x 440 (3/4)	1x660(1/2) 1x550(1/2) 1x440(3/4)	2x550(1/2) 2x220(3/4)	4x440(3/4)	SPECIAL ENHANCEMENT	6x100 5x75 4x50 Pit-work Weight	1x100 2x75 3x65 4x50 5x35 6x25 Pit-work	6x100 5x75 4x50 Pit-work Weight	1x100 2x75 3x60 4x50 5x35 6x25 Pit-work	6x100 5x75 4x50 3x35 2x25 Pit-work	1x100 2x75 3x60 4x50 5x35 6x25 Pit-work	Same as 1st week	Same as 2nd week
Wed	Weight	Weight	Weight	Weight	SPECIAL ENHANCEMENT	3 x 330 High-jump	Same as Mon. in running and HJ	4 x 220 High-jump	330-220-100-50, 50-100-220-300 High jump	High-jump 6 x 150	Same as Mon.	1 x 330 2 x 220 3 x 100 4 x 60	Fartlek High-jump
Thu	3x330(3/4)	Same as Tue.	Same as Tue.	3x330(3/4)	SAME AS TUE	4x100 5x75 4x50 Weight	Same as Tue.	Same as Tue.	Same as Tue.	Same as Tue.	Same as Tue.	Same as Tue.	Same as Tue.
Fri	Rest	Rest	Rest	Rest	REST	Rest	Rest	Rest	Rest	Rest	Rest	Rest	Rest
Sat	Bean-run	Beach-run	Beach-run or Competition	Beach-run or Competition	MEET	** C O M P E T I T I O N				**( Compete in other events unless important competition is coming.)			
Sun	Rest	Rest	Rest or Beach-run	Rest or Beach-run	SPECIAL ENHANCEMENT	S T A I R S H I L L - R U N S			S T A I R S				
Number of meet	0	0	0	2	3	1	3	4	2-3	1	0	0	

SUBJECT: L6 [[Basic training programme through-out a year( Answer to the question No.16 )]]

Month	10	11	12	1	2	3	4	5	6	7	8	9
Periodization	PREPARATION PERIOD ( No indoor season )						COMPETITION PERIOD					
Mon	--6 miles running / 1-hour stretching											
Tue	--Heavy weight training, --Stretching, --Easy wind sprints											
Wed	--Stretching, --4 x 110yrd easy, --8 x Run-throughs, Stretch in Yoga, --3 x 150(14"0-14"5), or 3 x 220(21"-22")											
Thu	Rest											
Fri	**The above combination depending upon a) Soreness, b) Personal anxiety, c) Meets coming-up,											
Sat	d) Weather, e) Injuries, f) Time of the year.											
Sun												
Number of meet	0	2	2	0	0	0	2	2	2	2	2	2

SUBJECT: L7

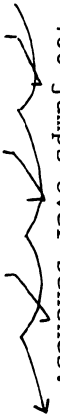
[[Basic training programme through-out a year( Answer to the question No.16 )]]

Month	10	11	12	1	2	3	4	5	6	7	8	9
Periodization	ACTIVE REST SEASON	BASIC TRAINING SEASON					PREPARING SEASON FOR COMPETITION		COMPETITION SEASON			
Mon	Basic training run 4-6 km	Rest					Basic training run 5-6km.		Restore training after competition			
Tue	Rest	Basic force training with weights( indoor ) ..... ( indoor )							Speed action force training( indoor )			
Wed	Several training of jumping on the grass	Basic sprinting training( indoor ) ..... ( indoor )							Jump-technical training( outdoor )			
Thu	Basic training run 4-6km	Basic force training with weights( indoor ) ..... ( indoor )							Maximal sprinting training( outdoor )			
Fri	Rest	Basic training run 4-6km.( outdoor )					Rest		45min preparing training for competition			
Sat	Rest	Jump-technical training( indoor )					Morning: Jump-technical training(out)		30min preparing training for competition			
							Afternoon: Basic sprint training(out)					
Sun	Basic training run 6-8km	Basic training run 8-10km.( outdoor )					Morning: Jump-technical training(out)		Competition--in one summer 15-20			
							Afternoon: 6-9x1/2 Max.sprint, 200-600m					
Number of meet									←-----		15-20	-----→



SUBJECT: L8

[[Basic training programme through-out a year ( Answer to the question No.16 )]]

Month	10	11	12	1	2	3	4	5	6	7	8	9
Periodization	General Preparation Period						Special Preparation Period and Competition Period					
Mon	-General muscle training; arms, trunk, legs e.g. Squats 6x90kg-6x100-5x110-5x110-3x120-2x130-1x140kg. -Jogging						-General muscular training; arms, trunk, legs e.g. Squats 4x100kg-4x110-4x120-3x120-2x140-1x150kg. -Jogging.					
Tue	-Long running 6 or 8 x 150m ( between 20"-21" )						-Long running 6 or 8 x 150 ( between 18"-19" )					
Wed	-Speed; 5 x 40 ( 4"9 ) 5 x 50 ( 5"9 ) 5 x 60 ( 6"9 )						-Speed; 5 x 40 ( 4"7 ) 5 x 50 ( 5"7 ) 5 x 60 ( 6"7 )					
Thu	-Dynamic musculation; 400 jumps over benches. 						-Dynamic musculation 400 jumps over benches.					
Fri	-Rest						-Rest					
Sat	-Technical jump on 7-steps, 9, and 11-steps						-Technical jump on 11-13 steps and 19-steps.					
Sun	-Rest						-Rest					
Number of meet												

SUBJECT: LL1                      [[Basic training programme through-out a year( Answer to the question No.16 )]]

Month	10	11	12	1	2	3	4	5	6	7	8	9
Periodization	PREPARATION PERIOD			WINTER COMPETITION PERIOD			SPRING COMPETITION PERIOD		SUMMER COMPETITION PERIOD			TRANSITION PERIOD
Mon	-Sprinting 40-50m -Strength with 100kg load.			-Long jumpings -Strength			-Technique -Sprinting -Strength		-Long jumping -Strength -Sprinting 100m -strength			-Cross country
Tue	-Rest			-Long jumpings -Strength			-4 x 150m run -Cross country		-Rest			-Rest
Wed	-Long jumpings -Jump power			-Rest			-Rest		-Sprintings -Strength			-Cross country 30min.
Thu	-Strength -Ball games			-Sprintings -Strength			-Technique -Sprintings -Strength		-Rest			-Rest
Fri	-Rest			-Rest			-4 x 100m run -Cross country		-Rest			-Cross country 30min.
Sat	-Sprintings -Jump power -Strength			-Warming-ups			-Rest		-Warming-ups			-Rest
Sun	-Rest			-Competition			-Rest		-Competition			-Rest
Number of meet	0	0	1	4	3	1	0	2	3	3	3	0

Month	10	11	12	1	2	3	4	5	6	7	8	9
Periodization	TYPE-I			TYPE-II			TYPE-III					
Mon	-Speed runnings -Weight trainings			-Barbell exercises -Special running exercise -Special jumping exercise			-Jumps from short approach running.					
Tue	-Jumps with 14 steps run-up -Speed runnings			-Barbell exercises -Successive jumpings -Running for speed endurance			-Speed runnings					
Wed	-Barbell exercises -Endurance running			-Successive jumpings -Flexibility exercises -Ball games			-Jumps from full approach running and practices of approach runnings					
Thu	-Rest			-Rest			-Rest					
Fri	-Build-ups -Free runnings			-Barbell exercises -Special jumping exercises -Successive jumpings -Endurance runnings			-Barbell exercises -Successive jumpings					
Sat	-Hurdle runnings -Jumps from full approach running			-Long jumping and hop work from short approach running, and standing long jumps -Running for speed endurance			-Flexibility exercises -Strength training					
Sun	-Rest			-Rest			-Rest					
Number of meet	0	0	1	2	2	0	1	2	4	1	2	0

SUBJECT: LL6

[[Basic training programme through-out a year( Answer to the question No.16 )]]

Month	10	11	12	1	2	3	4	5	6	7	8	9
Periodization	TRANSITION PERIOD	PREPARATION PERIOD ( I ) Indoor meets				PREPARATION PERIOD ( II )		COMPETITION PERIOD				TRANSITION PERIOD
Mon	-Endurance -Ball game	-Sprints	-Sprints	-Sprints	-Sprints	-Sprints	-Sprints	-Sprints	-Sprints	-Sprints	-Sprints	-Sprints
Tue	-Jogging -Ball game	-Jump	-Jump	-Jump	-Jump	-Jump	-Jump	-Jump	-Jumps from short and middle distance approach running	-Sprintings	-Sprintings	-Sprintings
Wed	-Strength	-Strength	-Strength	-Strength	-Strength	-Sprints	-Strength	-Sprints	-Strength	-Jumps from middle and full distance approach running	-Sprintings.	-Sprintings.
Thu	-Rest	-Rest	-Rest	-Rest	-Rest	-Rest	-Rest	-Rest	-Rest	-Rest	-Rest	-Rest
Fri	-Long sprinting -Imitation jump	-Jump	-Jump	-Jump	-Jump	-Jump	-Sprints	-Sprints	-Sprints	-Jumps from full approach running	-Sprintings	or rest, if a meet in week-end
Sat	-Strength	-Sprintings	-Strength	-Sprints	-Sprints	-Strength	-Strength	-Strength	-Strength	-Strength, or warm-ups if a meet in week-end.	-Strength	-Strength
Sun	-Cross country	-Cross country	-Cross country	-Cross country	-Cross country	-Cross country	-Cross country	-Cross country	-Cross country	-Cross country, or meet	-Cross country	-Cross country
Number of meet	0	0	2-3	3-4	4	1-2	0	2	4-5	5-6	3-4	1-2

SUBJECT: LL7

[[Basic training programme through-out a year( Answer to the question No.16 )]]

Month	10	11	12	1	2	3	4	5	6	7	8	9
Periodization	PREPARATION PERIOD ( I )			COMPETITION( I ) ( Indoors )	PREPARATION PERIOD(II)		COMPETITION PERIOD ( II )					
	GENERAL P. P.		SPECIAL P.P.		GENERAL P.P.	SPECIAL P.						
Mon	-Special strength training -Jump training											
Tue	-Sprint training											
Wed	-Technique -Speed-strength( Power ) training											
Thu	-Rest											
Fri	-Special strength training -Jump training											
Sat	-Technique -Strength training											
Sun	-Rest											
Number of meet	0	0	0	3	4	0	0	2	5	5	3	2

SUBJECT: T1

[[Basic training programme through-out a year( Answer to the question No.16 )]]

Month	10	11	12	1	2	3	4	5	6	7	8	9
Periodization	I(10/1-11/25)		II(11/26-2/15)		III(2/16-3/31)		IV( 4/1-9/22 )					
	Basic Preparation p.		First Preparation Period		Second Preparation P.		Competition Period					
Mon	-Progressive resistance velocity. -Specific technique		-Exercise impulsion -Exercise of specific technique. -Resistance speed.		-Variety of flexibility. -Strengthening of ankle -Jump exercise. -Successive jump and hoppings.		-Variety of flexibility exercises. -Speed work.					
Tue	-Variety of flexibility exercise. -Strengthening of ankle -Jump exercise -Successive jumps and hoppings.		.....Same		-Exercise impulsion of specific tech. -Resistance speed.		-Variety of flexibility exercise. -Strengthening of ankle. -Jump exercise. -Successive jumps and hoppings.					
Wed	-Muscle training series; 50% of the maximum.		.....Same.		.....Same.		-Rest.					
Thu	-Endurance organ. -Variety of flexibility exercise.		-Rest.		-Rest.		-Progressive resistance velocity. -Specific technique.					
Fri	Same as Thu.		-Progressive resistance velocity. -Specific technique.		-Variety of flexibility. -Strengthening of the ankle. -Exercise of the jump. -Successive jump and hoppings.		-Rest.					
Sat	Same as Tue.		.....Same.		-Variety of Flexibility. -Speed work.		-Rest.					
Sun	-Muscluler strengthenning. -Technique of the run(beach, hill)		.....Same.		-Variety of flexibility. -Strengthening of the ankle. -Exercise of the jump. -Successive jumps and hoppings.		-Competition.					
Number of meet												

Month	10	11	12	1	2	3	4	5	6	7	8	9	
Periodization	Preparation Period	Track Competition Season					Transition Period	Preparation Period					
								Beginning of track interval running	Comence jumping 3/week				
Mon	10x200m 5x150m	15x150m	10x150m 6x60m	Jumping Weights	10x150m Weights	10x100m 6x 60m Weights	--Cross-country running up to 5 miles;		10x300m (42") 3min reco.	10x150m Up-hills BOUNDINGS Weights	10x300m Weights	15x200m under 26"	
Tue	Run through to board. Jumpings Weights	...Same	Jumpings Run through.	10x100m Starts.	10x100m 6x 60m Starts.	Jumping	6-days/week --Weight training daily		10x150m Sprint up hills BOUNDINGS Weights.	10x300m (40") 3min. rec.	Jumpings	Jumpings Run through to board.	
Wed	20x100m 1 mile hoppings and boundings	20x100m	10x100m 6x 60m	Jumping Weights	...Same	Run through to board, Starts, Weights.			15x200m under 27" 3min rec.	Same as Mon.	Hill running BOUNDINGS Weights	...Same	
Thu	Jumping Weights	Run through Jumpings Weights	Run through to board.	6x60m Run through	Run through to board	Starts over 30m			10x150m Hill sprints BOUNDINGS Weights	15x200m (26") 3min recov.	Jumpings 6x200m	...Same	
Fri	Rest	Rest	Rest	Rest	Rest	Rest			Rest	Rest	Rest	Rest	
Sat	Fartlek over 3 miles BOUNDINGS Weights	Competition (Sprints)	Competition (Jumping and sprints)	Competition (Jumping)	Competition	Competition			Cross-country Weights	Beach-run through heavy sand Weights	...Same	Fartlek over 3 miles BOUNDINGS Weights	
Sun	Jumpings 60m sprints	Jumping Weights	...Same	...Same	...Same	...Same			10x150m 5x300m	5x300m 5x200m	Jumping on technique work	Jumpings	
Number of meet	0	*	..... Compete about 12 times in each event for the season.....				0	0	0	0	0	0	0

\* No competition of LJ, and TJ, only sprint race of 100m, 200m, 400m, and Relays.

SUBJECT: T4                      [[Basic training programme through-out a year( Answer to the question No.16 )]]

Month	10	11	12	1	2	3	4	5	6	7	8	9	
Periodization	( I )						( II )			( III )		( IV )	
	COMPETITION PERIOD						PREPARATION PERIOD						
							Indoor meets						
Mon	-3,000m run and sprints. -Weights, and swimming.						-3,000m run, -Interval running, -Weights.						
Tue	-Triple jumping, and perhaps bounding work						-3,000m run, -Interval running, -Bounding work.			As for section( I )		As for section(II)	
Wed	-Mainly sprinting with perhaps time trials, -Weights						-3,000m run, -Interval running, -Weights.						
Thu	-Light work-out; perhaps run-ups practice, and technique work.						-3,000m run, -Interval running, -Weights.						
Fri	-No track work; maybe weights( maximum lifts with low repetitions) and swimming.						-Weights						
Sat	-Competition						-10,000m cross country						
Sun	-3,000m run						-Jumping						
Number of meet	4	4	4	4	4	4	0	0	..... 2 or 3 meets over this period...				



SUBJECT: TT1 [[Basic training programme through-out a year( Answer to the question No.16 )]]

Month	10	11	12	1	2	3	4	5	6	7	8	9
Periodization	PREPARATION PERIOD( I )			WINTER COMPETITION PERIOD			PREPARATION PERIOD ( II )		SUMMER COMPETITION PERIOD			TRANSITION PERIOD
Mon	-Long sprinting -Strength			-Sprinting -Strength -Triple jump from 6-steps approach running			**Same as the programme in October to		***Same as the programme in January to March.			**** Ball-game
Tue	-Lots of jumpings			-Triple jump from 6-steps approach running			December.					
Wed	-Long jogging -Strength			-Rest								
Thu	-Rest			-Approach running -Long jump								
Fri	-Sprinting			-Triple jump -strength								
Sat	-Lots of jumpings			-Rest								
Sun	-Rest			-Competition								
Number of meet	0	0	0	0	1	2	0	2	2 + 1	3	2	1

SUBJECT: TT2

[[Basic training programme through-out a year( Answer to the question No.16 )]]

Month	10	11	12	1	2	3	4	5	6	7	8	9
Periodization	AUTUM- PREPARATION PERIOD			WINTER- COMPETITION PERIOD		SPRING- PREPARATION PERIOD			SUMMER- COMPETITION PERIOD			TRANSITION PERIOD
Mon	-Sprinting -Correction exercises			-Triple jump from short run-ups -Approach-run x 6		**Same as in the Autumn preparation period from October to December.			-Triple jump from 12m run-ups -Approach to hop work into the pit about 8 times			-Swimming 60min.
Tue	-Hoppings -gymnastics			-Triple jump from 20m run-ups -Approach runnings x 10					-Triple jump from 20m run-ups -Sprint dush 50m from standing start -Approach-running x 6			-Sauna-bath 60min.
Wed	-Barbell exercise -Other strength exercise			-Barbell exercise 5-6t. -Sprints 150,200m					-Rest			-Cross country 30min.
Thu	-Cross country -Sauna bath (Active rest)			-Rest					-Sprints; 30,50,80m -Approach running x 6			-Running 150 x 6
Fri	-Rest			-Barbell exercise 3-4t. -Sprints 100,50m					-Triple jump from 20m run-ups -Approach to hop works x 6			-Rest
Sat	-Sprintings -Gymnastics			-Triple jump from 20m run-ups					-Rest			-Swimming 60min.
Sun	-Barbell exercises -Other strength exercise			-Competition					-Competition -Sauna bath, Swimming			-Cross country 30min.
Number of meet	0	0	2-3	6-7	3-4	0	0	2-3	4-5	5	4	0

Month	10	11	12	1	2	3	4	5	6	7	8	9
Periodization	PREPARATION PERIOD( I )			COMPETITION PERIOD ( I )		PREPARATION PERIOD( II )			COMPETITION PERIOD( II )			TRANSITION PERIOD
Mon	-Technique -Sprintings			-Rest		-Technique -Sprintings			-Technique -Sprinting			-Ball game
Tue	-Jumpings			-Sprintings -Strength -Jump power		-Jump power -Strength			-Strength -Jump power			-Rest
Wed	-Ball game -Cross country			-Rest		-Ball game			-Rest			-Ball game
Thu	-Rest			-Technique		-Rest			-Sprinting -Strength			-Rest
Fri	-Sprinting -Jump power			-Rest		-Technique -Sprinting			-Rest			-Cross country
Sat	-Strength			-Warm-up		-Strength -Jump power			-Warm-up			-Ball game
Sun	-Rest			-Competition		-Rest			-Competition			-Rest
Number of meet	0	0	0	2	4	1	0	1	3	3	2	0

SUBJECT: TT4

[[Basic training programme through-out a year( Answer to the question No.16 )]]

Month	10	11	12	1	2	3	4	5	6	7	8	9
Periodization	PREPARATION PERIOD( I )			WINTER COMPETITION PERIOD			PREPARATION PERIOD ( II )	SUMMER COMPETITION PERIOD				
Mon	-Sprinting -Strength			-Sprinting -Approach running -Jumping			-Sprinting -Strength	-Sprinting -Triple jump -Quintuple successive jumps				
Tue	-Jumpings -Strength			-Jumpings -Strength			-Jumpings -Strength -Ball game	-Hoppings and boundings 30,50m -Long sprinting				
Wed	-Ball game -Cross country -Swimming, gymnastics			-Rest			-Cross country -Swimming	-Rest				
Thu	-Rest			-Sprint -Jumpings -Approach running			-Rest	-Sprinting, and Approach running -Jumpings and technical trainings				
Fri	-Sprintings			-Jumpings -Long sprinting			-Long sprints -Strength	-Various jumpings -Strength				
Sat	-Jumps and strength			-Rest			-Jumpings, purposing a technical improvement.	-Rest				
Sun	-Rest			-Ball game -Cross country			-Cross country	-Ball game and cross country or -Competition				
Number of meet												

SUBJECT: TT5

[[Basic training programme through-out a year( Answer to the question No.16 )]]

Month	10	11	12	1	2	3	4	5	6	7	8	9
Periodization	PREPARATION PERIOD							COMPETITION PERIOD				TRANSITION PERIOD
Mon	-Sprinting -Strength and Jump power							-Technique -Sprinting				Ball game
Tue	-Sprinting -Strength and Jump power							-Strength and Jump power				Cross country
Wed	-Ball game 60min. -Sauna bath							-Rest				-Rest
Thu	-Rest							-Approach running -Strength				-Ball game
Fri	-Sprinting -Strength and Jump power							-Rest				-Cross country
Sat	-Strength -Ball game-40min. and Sauna bath							-Warm ups -Easy jump exercise and running				-Rest
Sun	-Rest							-Competition				-Rest
Number of meet	0	0	0	0	0	0	0	4	4	3	3	0

-15-

SUBJECT: TT6 [[Basic training programme through-out a year( Answer to the question No.16 )]]

Month	10	11	12	1	2	3	4	5	6	7	8	9
Periodization	PREPARATION PERIOD( I )				COMPETITION PERIOD ( I )	PREPARATION PERIOD( II )			COMPETITION PERIOD( II )			TRANSITION PERIOD
Mon	-Sprinting -Strength				-Rest	-Technique -Sprinting			-Rest			-Ball game
Tue	-Jump power				-Technique -Sprinting	-Jump power -Strength			-Technique -Sprinting			-Rest
Wed	-Ball game( Active rest )				-Rest	-Rest			-Jump power -Strength			-Ball game
Thu	-Rest				-Sprinting -Strength	-Rest			-Rest			-Rest
Fri	-Sprinting -Strength				-Rest	-Technique -Sprinting			-Rest			-Ball game
Sat	-Jump power -Ball game				-Warm ups	-Jump power -Strength			Warm-ups			-Ball game
Sun	-Rest				-Competition	-Rest			-Competition			-Rest
Number of meet												

SUBJECT: TT7

[[Basic training programme through-out a year( Answer to the question No.16 )]]

Month	10	11	12	1	2	3	4	5	6	7	8	9
Periodization	PREPARATION PERIOD( I )			PREPARATION PERIOD( II ) ( including indoor meets )			COMPETITION PERIOD					TRANSITION PERIOD
Mon	-Cross country -Ball game -Swimming			-Sprinting 60x2, 100x5		-Sprints 40x6 -Long jump x 20 -Strength 4.8t. -Jumps 240m		-Sprinting 0.3km -Jumps 0.1km -Hoppings 0.3km				
Tue	-Shot putting x 20 -Sprints 100m x 4 -Hoppings 0.5km -Steppings 0.5km			-Sprints 40m x 5 -Triple jump x 9 -Long jump x 10		-Shot putting 130 -Sprinting 0.4km -Jumps 0.6km -Jogging 1,000m		-Triple jump x 15 -Long jump x 15 -Sprinting 0.2km				
Wed	-Sprinting 100m x 10 -Strength 6t.			-Rest		-Sprints 120m x 3 -Long jump x 20 -Sprints 200m x 3		-Sprinting 0.2km				
Thu	-Rest			-Competition		-Rest		-Approach running x 10 -Triple jump x 10				
Fri	-Sprints 100m x 4 -Hopping & jumping 1km. -Sprints 300m x 1			-Warm ups and 150 x 4		-Competition		-Rest				
Sat	-Gymnastics -Sprinting 0.4km. -Cross country 20min.			-Cross country 20min.		-Sprints 40m x 3 -Hopping 0.2km -Stepping 0.24km		-Competition				
Sun	-Rest			-Sprints 30m x 5, 100m x 3 150m x 4 -Jumps 0.3km.		-Approach run x 5 -Long jump x 10 -Sprints 0.3km		-Competition				
Number of meet	0	0	0	0	3	1	0	3	3	3	2	1

SUBJECT: TT8

[[Basic training programme through-out a year( Answer to the question No.16 )]]

Month	10	11	12	1	2	3	4	5	6	7	8	9
Periodization	PREPARATION PERIOD( I )			COMPETITION PERIOD( I )		PREPARATION PERIOD( II )		COMPETITION PERIOD( II )				TRANSITION PERIOD
Mon	-Speed	-Speed	-Speed -Approach running	-Approach running -Jumps	-Approach running -Jumps	-Speed	-Speed -Approach running	-Approach running -Jumps	-Approach running -Jumps	-Approach running -Jumps	-Approach running -Jumps	-Jumps -Speed
Tue	-Strength -Endurance	-Strength -Jump power	-Strength -Jump power	-Strength -Special jumps	-Strength -Special jumps	-Strength -Endurance	-Strength -Jumps	-Strength -Jumps	-Special strength -Special jumps	-Special strength	-Special strength -Jumps	-Strength -Jumps
Wed	-Rest	-Rest	-Rest	-Rest	-Rest	-Rest	-Rest	-Rest	-Rest	-Rest	-Rest	-Rest
Thu	-Speed	-Jumps -Sprints	-Approach running	-Jumps -Approach running	-Sprints	-Sprints	-Approach running -Speed	-Approach running -Speed	-Approach running	-Approach running -Sprints	-Approach running -Sprints	-Sprints
Fri	-Strength	-Jumps -Flexibility exercise	-Sprints	-Jumps -Throwing	-Strength	-Strength	-Jumps	-Jumps	-Jumps	-Jumps	-Jumps	-Jumps
Sat	-Flexibility exercise	-Endurance -Strength	-Strength -Active rest	-Strength -Endurance	-Cross country -Flexibility exercise	-Cross country -Flexibility exercise	-Special strength exercise	-Strength -Flexibility exercise	-Strength -Flexibility exercise	-Strength -Endurance	-Strength	-Strength -Endurance
Sun	-Rest	-Rest	-Rest	-Rest	-Rest	-Rest	-Rest	-Rest	-Rest	-Rest	-Rest	-Rest
Number of meet	0	1-2	1-2	3-4	5-6	0	1	3-4	5-6	7-8	3-4	1-2



SUBJECT: TT9                      [[Basic training programme through-out a year( Answer to the question No.16 )]]

Month	10	11	12	1	2	3	4	5	6	7	8	9
Periodization	PREPARATION PERIOD( I )			PREPARATION PERIOD( II )		PREPARATION PERIOD( III )		COMPETITION PERIOD				
Mon	-Sprinting			-Sprinting -Approach running -Strength		-Sprinting		-Sprinting -Long jump				
Tue	-Jump power			-Approach running Triple jumps from short run-ups		-Jump power		-Approach running -Triple jump				
Wed	-Strength			-Rest		-Strength		-Jump power -Strength				
Thu	-Cross country			-Sprinting -Approach running		-Cross country		-Rest				
Fri	-Rest			-Approach running -Triple jump -Strength		-Rest		-Rest				
Sat	-Jump power			-Cross country		-Sprinting		-Warming up				
Sun	-Strength			-Rest		-Jump power -Strength		-Competition				
Number of meet												

SUBJECT: TT10

[[Basic training programme through-out a year( Answer to the question No.16 )]]

Month	10	11	12	1	2	3	4	5	6	7	8	9
Periodization	PREPARATION PERIOD( I )			COMPETITION PERIOD( I )		PREPARATION PERIOD( II )		COMPETITION PERIOD( II )				TRANSITION PERIOD
Mon	-Sprinting -Technique			----		-Sprinting -Technique		-Technique -Sprinting				-Ball game
Tue	-Jumpings			-Sprinting -Strength -Jumpings		-Strength -Jumpings		-Strength -Jumpings				---
Wed	-Ball game			----		-Ball game		----				-Ball game
Thu	----			-Technique		----		-Sprinting -Strength				---
Fri	-Sprinting -Jumpings			----		-Sprinting -Technique		----				-Cross country
Sat	-Strength			-Warming up		-Strength -Jumpings		-Warming up				-Ball game
Sun	-----			-Competition		----		-Competition				----
Number of meet	0	0	0	2	4	1	0	1	3	2	2	( 1 )

SUBJECT: P1

[[Basic training programme through-out a year( Answer to the question No.16 )]]

Month	10	11	12	1	2	3	4	5	6	7	8	9	
Periodization	PREPARATION PERIOD							PRE-COMPETITION PERIOD	COMPETITION PERIOD				
Mon	-Rest			-Rest				-Rest	-Jogging				
Tue	-Long jogging			-Long jogging				-Easy technique	-Technique				
Wed	-Gymnastics			-Gymnastics				-Sprint	-Sprint				
Thu	-Long jogging			-Long jogging				-Active rest	-Jump				
Fri	-Sprints			-Sprints				-Sprints	-Sprints				
Sat	-Basic conditioning			-As before, last little faster				-Sprints	-Game or quality jump				
Sun	-Rest			-Sprinting					-Jogging				
Number of meet	0	0	0	0	0	0	0	1	5	5	5	3	

SUBJECT: P2 [[Basic training programme through-out a year( Answer to the question No.16 )]]

Month	10	11	12	1	2	3	4	5	6	7	8	9
Periodization	PREPARATION PERIOD			COMPETITION PERIOD						TRANSITION PERIOD		PREPARATION PERIOD
Mon	-Weights -Over distance	-Weights, -Distance, -Vaults.		-Weights -Vaults	-Weights -Vaults						-Rest	-Weights -Over distance
Tue	-Over distance	-Gymnastics, -Intervals of 300-400's		-Sprints -Gymnast. -Intervals 60-110's	-Sprints 60-110's, -Gymnastics, -Intervals						-Rest	-Weights -Over distance
Wed	-Weights -Over distance	-Weights		-Strides 110-150's	-Strides 110-150's						-Rest	-Weights -Over distance
Thu	-Over distance	-Gymnastics, -Intervals 220's		-Weights -Vaults	-Vaults -Strides 110-150's						-Rest	-Over distance
Fri	-Over distance	-Weights, -Over distance.		-Sprints, -Gymnastic. -Intervals 60-110's	-Sprints, -Gymnastics, -Intervals.						-Rest	-Over distance
Sat	-Weights -Over distance	-Strides 150's		-Strides 150's	-Strides 150's( Meets )						-Rest	-Weights -Over distance
Sun	-Over distance	-Rest		-Rest	-Rest						-Rest	-Over distance
Number of meet	0	0	0	2-3	3-4	3-4	2-3	2-3	2-3	0	0	0

SUBJECT: P4

[[Basic training programme through-out a year( Answer to the question No.16 )]]

Month	10	11	12	1	2	3	4	5	6	7	8	9
Perio dizat ion												
Mon	-1 day jumping, -2-3 days weight lifting, -2-3 days cross country running,			-1 day jumping, -2-3 days sprinting, -2-3 days weight lifting( + cross country run ) -1 day rest,				-1 day jumping, -1 day rest -2-3 days sprinting, <del>-1-2 days competition.</del>				
Tue	-1 day sprinting, -1 day res.			-1 competition.				(Weight lifting and cross country )				
Wed	<p><b>**Weight lifting 3-4 times a week, 30-45 minutes.</b></p> <p>-Running 4-5 times a week, 90-100% of the maximum speed; 50-100-150yrd. for about 60-90 minutes.</p> <p><del>-Jumping once a week; however, in 1964-68 I was jumping 5 days a week.</del></p>											
Thu	I always try to jump as high as possible in practice. I vaulted 18'9 in practice at El Paso, Texas in 1972.											
Fri												
Sat												
Sun												
Number of meet	0	0	0	about 4	4-6	about 3	about 3	4-6	5-8	5-8	5-8	about 4

SUBJECT: P5                      [[Basic training programme through-out a year( Answer to the question No.16 )]]

Month	10	11	12	1	2	3	4	5	6	7	8	9	
Periodization	PREPARATION PERIOD								COMPETITION PERIOD				
									Indoor meets				
Mon	-Sprint work			*This is all depending on the meets I have; how many and when I have them.			-Sprints			**This is all depending on the meets I have; how many and when I have them.			
Tue	-Weight lifting						-Weights						
Wed	-Jumpings						-Jumpings						
Thu	-Weight lifting						-Sprints or Gymnastics						
Fri	-Jumpings						-Jumpings						
Sat	-Sprintings						-Sprints or Gymnastics						
Sun	-Whatever I feel. ( PS. Early morning except Saturday and Sunday,						-Jumpings and the day of competition, I run 4km. )						
Number of meet	0	0	0	4	6	0	0	1	10	8	8	4	

SUBJECT: P7 [[Basic training programme through-out a year( Answer to the question No.16 )]]

Month	10	11	12	1	2	3	4	5	6	7	8	9	
Periodization	PREPARATION PERIOD						COMPETITION PERIOD				TRANSITION PERIOD	PREPARATION PERIOD	
	Indoor meets												
Mon	-Weights -Sprint drills			-Weights -Sprint drills		-Weights -Sprint drills		-Weights -Sprint drills	-Weights -Sprint drills			.	
Tue	-Intervals 4 x 400m, etc. ( 1 and 1/2min rest ) -Gymnastics			-Intervals 5x200m or Vaultings -Gymnastics		.....Same		-Vaulting	-Rest			.	Same as
Wed	-Weights -Sprint drills			-Weights -Sprint drills		.....Same		.....Same	-Vaultings			E	Months of
Thu	-Gymnastics -Intervals 6 x 200m ( 60sec. rest )			-Intervals 6x150m -Gymnastics		.....Same		-Sprints 100, 50m	-Sprint drills			.	
Fri	-Weights -Sprint drills			.....Same, or rest for meet		.....Same		-Rest	-Rest			S	
Sat	-Cross country 4.9km/			-Meet, or Sprint, or Vaulting (Practice)		.....Same		-Vaulting	-Meet			T	
Sun	-Rest, or Sprints; 150-50m.			-Cross country 4.9km.		.....Same		.....Same	-Cross country 3-4km.			.	
Number of meet	0	0	0	1	2	1	1	1	3	3	0	0	

SUBJECT: PP1

[[Basic training programme through-out a year( Answer to the question No.16 )]]

Month	10	11	12	1	2	3	4	5	6	7	8	9
Periodization	PREPARATION PERIOD( I )				COMPETITION PERIOD(I)	PREPARATION PERIOD( II )			COMPETITIONPERIOD( II )			TRANSITION PERIOD
Mon	-Strength -Speed -Technique				-Strength -Speed	-Technique -Gymnastics -Long sprinting			**Same as in the first competition period			
Tue	-Agility exercises -Speed endurance -Strength				-Technique -Gymnastics	-Long jump -Sprinting -Strength						
Wed	-General( all-round ) physical fitness training				-Sprints -Acrobatic exercises	-Cross country -General(all-round) physical fitness training						
Thu	-Strength -Technique -Speed				-Rest	-Technique -Gymnastics -Long sprinting						
Fri	-Strength -Speed endurance -Agility exercises				-Warming up	-Long jump -Sprintings -Barbell exercises						
Sat	-Cross country -Ball game				-Competition	-Technical imitations -Cross country -Ball game						
Sun	-Rest				-Rest	-Rest						
Number of meet	0	0	0	1-2	4	2	1	1	3	4	3	0



Month	10	11	12	1	2	3	4	5	6	7	8	9
Periodization	PREPARATION PERIOD(I)			COMPETITION PERIOD( I ) ( Indoor meets )		PREPARATION PERIOD( II )			COMPETITION PERIOD( II )			TRANSITION PERIOD
Mon	-Cross country -Long sprinting -General(all-round fitness training)		-Vaulting	-Rest		**Mostly the same as in the	-Cross country -Short sprints	-Vaulting	-Cross country	-Rest		-Rest
Tue	-Gymnastics		-Sprints	-Vaultings		first competition period from Jan. to Feb.	-Long sprints 120-130m	-Gymnastics	-Gym.	-Vaultings		-Rest
Wed	-Cross country -Long sprintings -General(all-round) fitness training		-Cross country -General fitness training	-Cross country			-Rest	-Sprints	-Warm ups	-Warming ups		-Rest
Thu	-Ball game		-Rest	-Rest			-Cross country -Short sprints	-Rest	-Rest	-Rest		-Rest
Fri	-Gymnastics		-Vaulting	-Rest			-Long sprints 120-130m -Gym.	-Vaulting	-Rest	-Rest		-Rest
Sat	-Cross country -Long sprints -General(all-round) fitness training		-Sprints	-Warming ups			-Ball game	-Sprints -Gym.	-Warm ups	-Warming ups		-Rest
Sun	-Rest		-Ball game	-Competition			-Rest	-Rest	-Competition	-Competition		-Rest
Number of meet	0	0	4	5	2	1	0	1	4	3	3	0

SUBJECT: PP3

[[Basic training programme through-out a year( Answer to the question No.16 )]]

Month	10	11	12	1	2	3	4	5	6	7	8	9
Periodization	PREPARATION PERIOD( I )			COMPETITION PERIOD( I ) ( Indoor meets )			PREPARATION PERIOD( II )		COMPETITION PERIOD( II )			
Mon	-Sprintings -Special exercises on the pole vaulting			-Gymnastics -Rope exercises -Barbell exercises			-Pole vaulting		-Cross country -Warming ups			
Tue	-Strength exercise -Gymnastics			-Pole vaulting -Sprintings			-Barbell and Rope exercises -Gymnastics		-Pole vaulting -Sprinting			
Wed	-Special exercises on the pole vaulting -Pole vaulting			-Gymnastics -Special exercises on the pole vaulting			-Sprintings -Running exercise		-Gymnastics -Special exercises on the pole vault			
Thu	-Rope and gymnastics -Barbell exercises			-Pole vaulting			-Pole vaulting		-Pole vaulting			
Fri	-Special exercise on the pole vaulting -Sprintings			-Special exercises on the pole vaulting			-Strength training		-Rest			
Sat	-Special strength exercise -Acrobatic exercise			-Rest			-Cross country		-Warming ups			
Sun	-Rest			-Competition			-Rest		-Competition			
Number of meet												

100

Month	10	11	12	1	2	3	4	5	6	7	8	9
Periodization	AUTUM-WINTER PREPARATION PERIOD				WINTER COMPETITION PERIOD		SPRING PREPARATION PERIOD		FUNDAMENTAL COMPETITION PERIOD			
Mon	-Exercises holding a pole -Pole vaulting -Running exercises -Building up running				-Gymnastics -Barbell exercise		-Sprinting -Special exercises of vaulting -Pole vaulting -Shot putting		-Cross country, or non-special events such as Hurdle running, High jump, Shot putting, etc.			
Tue	-Gymnastics -Rope exercises -Barbell exercises				-Special exercises of vaulting -Pole vaulting		-Barbell exercise -Strength on the training machine		-Pole vaulting from the middle distance approach running -Special exercises holding a pole			
Wed	-Special exercises holding a pole				-Rest		-Pole vaulting from the short and the middle distance approach-run.		-Strength on the training machine			
Thu	-Weight training; barbell exercises				-Pole vaulting		-Special exercises of the vaulting -Build-ups		-Pole vaulting from the full approach running, or from the approach running 2-steps less than that.			
Fri	-Pole vaulting -Pole running				-Gymnastics -Basket ball		-Pole vaulting -Jump exercise		-Rest			
Sat	-Gymnastics -Soccer, or basket ball				-Rest		-Cross country -Gymnastics		-Warming ups			
Sun	-Rest				-Competition		-Rest		-Competition			
Number of meet	0	0	1	2	3	1	1	2	3	3	3	2

SUBJECT: PP6

[[Basic training programme through-out a year( Answer to the question No.16 )]]

Month	10	11	12	1	2	3	4	5	6	7	8	9
Periodization	PREPARATION PERIOD( I )				COMPETITION PERIOD( I )		PREPARATION P. ( II )	COMPETITION PERIOD( II )				TRANSITION PERIOD
Mon	-Cross country -Barbell exercise -Intervals 150,200 meters		-100m sprints -Long jumps, and high jumps, etc.		-Sprintings -Pole vaulting -Gymnastics		-Cross country -Ball game	-Easy sprintings -Pole vaulting				
Tue	-Warm up exercise -Gymnastics		-Barbell exercise -Gymnastics -Special exercise holding a pole		-Barbell exercise		-Barbell exercise	-Gymnastics -Repetition running				
Wed	-Rest		-Sprintings -Pole vaulting		-Rest		-Gymnastics	-Rest				
Thu	-Ball game -Barbell exercise		-Rest		-Pole vaulting		-Ball game -Swimming	-Pole vaulting				
Fri	-Gymnastics		-Repetition running		-Cross country -Easy calisthenics		-Rest	-Barbell exercise -Ball game				
Sat	-Repetition running		-Pole vaulting		-Rest		-Cross country	-Rest				
Sun	-Gymnastics -Swimming		-Sprintings -Gymnastics		-Barbell exercises -Jump exercises		-Gymnastics	-Pole vaulting -Sprintings				
Number of meet	1	0	0	2	4	1	0	3	4	3	3	2

SUBJECT: PP8

[[Basic training programme through-out a year( Answer to the question No.16 )]]

Month	10	11	12	1	2	3	4	5	6	7	8	9
Periodization	PREPARATION PERIOD( I )			WINTER COMPETITION PERIOD		PREPARATION PERIOD( II )		SUMMER COMPETITION PERIOD				
Mon	-Ball game -Vaulting and jump power			-Speed		-Strength -Vaulting and jump power		-Speed -Imitation exercise of vaulting				
Tue	-Barbell exercises -Gymnastics			-Special technical training		-Flexibility exercises -Imitation exercise of vaulting		-Pole vaulting				
Wed	-Ball game -Imitation exercises of vaulting			-Rest		-Strength -Flexibility exercises		-Rest				
Thu	-Barbell exercises -Gymnastics			-Special technical training		-Rest		-Pole vaulting				
Fri	-Vaulting and jump power			-Endurance		-Strength -Endurance		-Strength -Vaulting and jump power				
Sat	-Strength			-Strength		-Gymnastics -Acrobatic exercise -Ball game		-Imitation exercises of vaulting -Ball game				
Sun	-Rest			-Rest		-Rest		-Rest				
Number of meet	0	0	1	2	3	1	2	2	3	2	3	0-1

SUBJECT: PP9

[[Basic training programme through-out a year( Answer to the question No.16 )]]

Month	10	11	12	1	2	3	4	5	6	7	8	9	
Periodization	PREPARATION PERIOD( I )				COMPETITION PERIOD( I )	PREPARATION PERIOD( II )			COMPETITION PERIOD ( II )				
	GENERAL PERIOD		SPECIAL PERIOD			GENERAL PERIOD		SPECIAL PERI.					
Mon	-Strength work -Acrobatic exercise		-Pole vaulting -Gymnastics		-Strength with middle weight -Easy sprints		-Technique -Gymnastics -Jogging		-Pole vault -Gymnastics		-Strength work with middle weight -Easy sprinting		
Tue	-Gymnastics -Jogging -Sprinting -Technique		-Sprinting -Ball game		-Pole vaulting + Gymnastics		-Strength -Jogging		-Sprinting -Ball game		-Pole vaulting + Gymnastics		
Wed	-Kettle bell exercise		-Pole vaulting -Gymnastics		-Sprinting		-Condition jogging		-Pole vaults -Gymnastics		-Sprinting		
Thu	-Barbell exercise -Acrobats -Jogging		-Sprinting		-Rest		-Technique -Gymnastics -Jogging		-Sprinting		-Rest		
Fri	-Gymnastics -Jogging -Technique		-Pole vaulting -Barbell exercise		-Warming ups		-Strength -Jogging		-Pole vaults -Barbell exercise		-Warming ups		
Sat	-Barbell exercise -Cross country -Ball game		-Gymnastics -Sprinting -Cross country		-Competition		-Agility exercise -Cross country -Ball game		-Gymnastics -Sprinting -Cross country		-Competition		
Sun	-Rest		-Rest		-Rest		-Rest		-Rest		-Rest		
Number of meet	0	0	0	1-2	4	2	0	0	1	3	4	3	1-2

Month	10	11	12	1	2	3	4	5	6	7	8	9
Periodization	TRANSITION/ PREPARATION-I		PREPARATION PERIOD-II			COMPETITION PERIOD						TRANSITION / PREPARATION
						EARLY COMPETITION		MIDDLE COMPETITION	LATE COMPETITION (Europe only)			
Mon	-Weights-3 stes of 10 reps. -Hill work on cardio-vascular ie) 10reps/jog		-Vault(short or long approach) x 25-30. Work on technique. -Weights; 5,4,3,2,1 style with increasing weight			-Vaults x 20-25 -Weights		-Vaults 15-20 -Weights		**Travel most of the time and train when possible fast		*Same as in Oct. and Nov.
Tue	-Gymnastics -Sprints 10x200m 30sec. w/jog-walk inbetween.		-Pole runs x 20; working on rhythm & check-marks -Sprints 150m x 5-7 fast rhythm -Gymnastics			-Pole runs x 15 -Sprints fast 150m x 5 -Light gymnastics		-Pole runs x 5-10 -Sprints fast 150m x 3 -Light gymnastics		of stretching, pole runs as much as I can.		
Wed	-Weights		-Hill runs; 50-100m x 5-7 @ 85% effort -Weights			-Hill runs 5 x 50m @90% effort -Weights		-Hill runs 3 x 50m @100% effort -Weights				
Thu	-Gymnastics -Sprints 10 x 150m 20sec w/jog-walk inbetween.		-Pole runs x 25-30 -Sprints 100m x 5-7 fast rhythm -Gymnastics			-Pole runs x 20-25 -Sprints fast 100m x 5 -Light gymnastics		-Pole runs x 5-7 -Sprints fast 100m x 2 -Light gymnastics				
Fri	-Weights -Hill works		-Weights			-Weights		-Rest				
Sat	-Gymnastics -Sprints 100mx10 14sec w/jog-walk inbetween.		-Vaults x 20-30 -Sprints fast 75m x 5-7			-Vaults x 15-20 -Sprints fast 75m x 5 (Competition)		-Vaults x 15-20 -Sprints fast 75m x 5 (Competition)				
Sun	-Rest		-Rest			-Rest		-Rest				
Number of meet	0	0	0	0	1	4	4	4	4	8	8	0

SUBJECT: H1 [[Basic training programme through-out a year( Answer to the question No.16 )]]

Month	10	11	12	1	2	3	4	5	6	7	8	9
Periodization	PREPARATION PERIOD Indoor meets						COMPETITION PERIOD				TRANSITION PERIOD	
Mon	-1 mile of jogging, -10 wind-sprints( 3/4 speed ), -15min exercise; basically to loosen leg muscle.											
Tue	-Same											
Wed	-Same											
Thu	-Same											
Fri	-Same *On the average 10 indoors, and 14 outdoors. **No jumping trials in practice, jumps only in competition. This means my jump training is depended on basket ball.											
Sat	-Basket ball											
Sun	-Basket ball											
Number of meet	0	0	1	6	3	0	2	4	4	4	0	0



SUBJECT: H2

[[Basic training programme through-out a year( Answer to the question No.16 )]]

Month	10	11	12	1	2	3	4	5	6	7	8	9
Periodization	PREPARATION PERIOD						COMPETITION PERIOD					TRANSITION PERIOD
							Indoor meets					
Mon	-Running & hopping stairs, -Weight lifts.			-Jumps, -Weight lifts.			-Running; 100, 200, 400m					-Rest
Tue	-Running; 100, 200, 400m			-Running; 60, 200m			-Hopping stairs, -Weight lifts.					-Rest
Wed	-Running & hopping stairs, -Weight lifts.			-Jump or hopping stairs, -Weight lifts.			-Jump or running					-Rest
Thu	-Running; 100, 200, 400m			-Running; 60, 200m			-Moderate weight lifts					-Rest
Fri	-Running & hopping stairs, -Weight lifts			-Moderate exercises			-Moderate exercises					-Rest
Sat	-Moderate exercises			-Competition			-Competition					-Rest
Sun	-Rest			-Rest			-Rest					-Rest
Number of meet	0	0	1	3	4	3	1	3	4	6	1	0

-56-

SUBJECT: H3

[[Basic training programme through-out a year( Answer to the question No.16 )]]

Month	10	11	12	1	2	3	4	5	6	7	8	9	
Periodization	TRANSITION PERIOD	PREPARATION PERIOD				COMPETITION PERIOD							
		General Preparation Period		Special Preparation Period		First half			Latter half(Concentration P.)				
Mon	.	-Weights: Half squats, Clean & Jerk, Calf raise, Pull-rowing, Sit-ups. Everything is doing quick. Explosion is the key!		-Same as winter months. But, more quality & less quantity.		-Weights Wvery other week.			*During this period, I jump so often that I train. Everyday I am not jumping and I do whatever I think I need at the particular time.				
Tue	. R	-Interval 300m run for background of strength. I do 4 of them with a 6min rest in-between, 1st, few walks 42, 41sec, Then 40, 39, 38sec --6 x 100's		...Same. But, every other weeks I breakdown=500,400,300,200, 300,400,500 with complete recovery in-between.			-Interval run; 200's--25,27,26sec.						
Wed	E S	-Triple jump, bounding fundamentals. 8,000m run in the hill. For the strength 6x100		....Same			.....Same 5,000m run easy						
Thu	T .	-3x150m with 250m walks intervals; 4x70's stressing relaxation & acceleration 6x100's		.....Same			.....Same						
Fri	. . . .	-Same as Monday. My first indoor meet is in the second week in January. So, my weight lifting is decreased because I compete 2-times wvery week end(indoor)		-Only weights on Morning, during this period. I travel to or have competitions			-Travel to, or Competitions						
Sat	.	-Rest or competition		-Rest or competition			-Competition						
Sun		-Warm-down; 1,200m jogging		.....Same			-Rest						
Number of meet	.....No meets except January.		.....14.....		.....14.....			.....20-25.....					