

force of the Olympic concept. When a nation has once presented the Olympic Games and, as was the case in Germany in 1936, becomes completely imbued with the inner force of the Olympic concept, it may be concluded that sport will continue its useful development in that country throughout the years.

In the course of the re-planning of the Olympic Skiing Stadium in Garmisch-Partenkirchen a new entrance gate was erected. It was adorned with artistic figures depicting beauty and strength, combat and victory. These sculptures surround two plaques, one of which bears words commemorating the Fourth Olympic Winter Games and the names of the victors. The other plaque was intended for the same purpose following the Fifth Olympic Winter Games. It will remain uninscribed for the time being, but we hope that in the not too distant future it will also bear a message for the world.

Specifications or Requirements of The New 100 Meter Champion

by Larry Snyder, Ohio State University, Columbus (Ohio)

The following article is the second in the series contributed by American experts in the different fields of sport in reply to our request. The United States, which have contributed substantially towards the practical development of sport, are thus also active in the intellectual sphere. The series, arranged with the end in view of encouraging an exchange of opinion on the technical and scientific aspects of sport, will be continued.

Let us assume, first of all, that it is humanly possible to improve the present record of 10.2 seconds for the 100 meter dash. That is mere conjecture. Scientific experimentation at one American University has resulted in a set of standards which lists the perfect record, the ultimate in sprinting 100 meters, as 10.06. That any such list or table is theoretical and can never be absolute is shown by the fact that Harbig, Germany, has already surpassed the "ultimate" marks set for the 400 and 800 meters. The 110 meter hurdle mark also has been eclipsed .2 seconds by Towns, U. S. A. These facts would indicate that no satisfactory formula has as yet been discovered which will enable us to predict accurately the stopping point in record breaking.

When we grant the possibility of breaking an athletic record, we base our concession on past performance. Track and Field records that only a few years ago were considered the Ultimate, have been surpassed. If memory serves correctly, the only American record that has withstood the continued attack of a decade of athletes is the 100 yard mark of 9.4 seconds set by George Simpson, Ohio State University, in 1929. Four other sprinters, Wycoff and Meier in 1930; Metcalf in 1933, and Owens in 1935 and 1936, equalled this record. Eddie Tolan never ran 9.4, yet he defeated Metcalf in the 1932 Olympic Games at Los Angeles, while establishing the record of 10.3 for 100 meters. Simpson did not compete in the Olympics until two years past his prime. A pulled muscle in the final American tryouts at Boston in 1928 eliminated him. He finished fourth behind Jonath, Germany, at Los Angeles. The evident reason why sprint marks are more difficult to surpass is the brevity of the race. Practically all top ranking sprinters will run within inches of each other for 50 meters — in a 50 meter race. Probably such a statement could not be proven because this race or its 60 yards equivalent is run only in the American Indoor Meets where gun beating is rampant. The crack sprinters know that their advantage at the start will approximate their margin at the finish. Only a handful of pistol firers in this country are competent to start such a race. The others fire the gun when the runners start. Many a National champion has won his race before the gun fired.

The picture changes considerably when the dash men assemble at the start for a race of 100 meters. We must remember, however, that these champions all have approximately the same speed for 50 meters. At this increased distance other factors must be considered. A fast start and a brief burst of speed are not enough.

In the 1932 games we saw Yoshioka, the Japanese sprinter, race to a two, three, four meter lead — it looked like five meters — in the first 15 meters of the preliminary heats of the 100 meter run. His reaction time was so fast that he appeared to have beaten the gun, when you were also sure that Franz Miller had every runner “set” when he fired the pistol. For 60 meters he was the fastest human who has exhibited in this country. Although his starting advantage put him into a nice lead in the first half of the 100 meters final, he finished last. The other factors that we must consider were not present. He did have two of the qualifications that the new record holder must possess, namely, the ability to react faster to the stimulus of the gunfire than his opponents and the ability to gain momentum more quickly. Yoshioka’s running form is not a clear picture in my mind at present. Whether his form was imperfect, whether he did not have the condition, training, to last through the full 100 meters at top speed, or whether he did not have the physical strength to carry this tremendous speed beyond the 50 meter mark does not matter greatly. In searching for the new champion we know he must have the qualifications that Yoshioka possessed; furthermore, he must carry through the full 100 meters.

Owens, the present champion, was rated a poor starter by many critics who admit to possessing more than a passing knowledge of sprinting. What they failed to detect was that Jesse Owens’ start was in direct proportion to the quality of his competitors. When pitted against mediocre sprinters he started poorly. Unless his competitors were fast enough to be a serious threat, Jesse did not go to the mark with the nervous stimulation so necessary for fast starting. When champions were gathered at the starting mark, Jesse was the champion of champions in starting and gaining headway. I cannot recall a single championship race during his career (when the starter was competent enough to get the race off without a series of false starts) that Jesse ever was headed after the crack of the gun.

A close analysis of slow motion pictures of the 100 meter final at Berlin shows that Metcalf made the first move. His hands left the track before any of the others, yet Owens, relaxed and reaching easily with his feet instead of jabbing the track, had a three meter lead at the 20 meter mark. At 60 meters Jesse still possessed that margin.

In the final 40 meters of the Berlin race, Metcalf cut Owens’ lead to a scant four feet, which was the margin of victory. Each time the 100 meter record is broken or tied the winner is acclaimed the “fastest human”. Such a statement connotes sheer running speed. The image does not include the first part of the race as the runner gains headway, it pictures a sprinter in full stride leading the field. While it might be considered heresy for me to say so, I believe that Metcalf rather than Owens was the “fastest human” in 1936, if one disregards every qualification save sheer speed. Jesse won the gold medal and clipped the old record because he possessed more of the qualifications for championship performance than did Metcalf. Although Metcalf reacted first at the start, Jesse performed so faultlessly, technically, that his early momentum plus his natural qualifications carried him to an easy victory. Running technique is a factor that cannot be slighted if one is to gain the championship.

Every move must be so timed and so directed that there is no lost motion. While the curved line is the loveliest distance between two places, the straight line is still the shortest distance. Wide swung arms, feet toeing in, or out, and swaying torsoes add distance to the finish line. Jesse Owens and Bill Carr (gold medal winner in the 400 meter run at Los Angeles) possessed the timing and technique of true champions. Their grace and rhythm will live in the minds of everyone who saw them perform.

Condition, the physical fitness of the athlete to carry through the full distance of the race at his fastest pace with a minimum of fatigue, is another important factor in record breaking. It creates confidence. The new champion must be trained to perfection so that when the supreme effort is made every muscle and tendon will respond to the stimulus in the final yards as they did while gaining momentum.

Was it fatigue building up in Owens' body which enabled Metcalf to gain two meters in the final half of the race? Apparently not. Jesse went on in succeeding days to set a new Olympic broad jump record of 26'5—21/64" and to knock half a second of the two hundred meter record; then finished the week with a brilliant 100 meter leg in the record breaking 400 meter relay.

In trying to select the best features from the styles of both Metcalf and Owens, one other factor should be considered. Perhaps tension, due to the pressure put on Jesse, participating in his first Olympic Games against the man who had secured a virtual tie in the 100 meters in the preceding Olympics, was too great to allow for perfect coordination throughout the race. That, however, should have manifested itself at the start — where he was perfection itself — rather than in the later stage of the race. Nor could this argument be used in defense of Metcalf's poor starting. He was an "old campaigner" with world-wide experience in championship meets.

Size, in the past, has been no measure of sprinting ability. Tolan, a mite, as athletes are considered, gained a hair line decision over Metcalf in 1932 (time 10.3). Six feet one and one half inches tall, weighing 185 pounds, Metcalf had all the physical qualifications, yet Tolan won the gold medal. In 1936 Jesse Owens, five feet ten and one half inches tall, weighing 164 pounds, surpassed all previous records for the 100 and 200 meter runs. His 10.2 at Berlin was discredited because of a trailing wind of greater than record making proportions. His 10.2 mark made in Chicago, in the finals of the National Collegiate Championships, was given international sanction and is the present record. Jeffery and Ewell appear to be the best U. S. A. sprinters for 1940. Both are bigger than Owens and smaller than Metcalf. The length of stride also has meant little or nothing. Tolan's six foot stride, Metcalf's eight and one half foot and Simpson's nine footer, all brought the same result. Who will say it was because of Jesse's seven foot stride that he broke the record? Hazarding a guess as to the length of Yoshioka's stride, I would say, five feet. Guessing again, I would say the next champion will have a stride of eight feet or longer.

Smoothness and rhythm have been mentioned. Simpson and Metcalf had driving power. They hit the track hard with their feet, their arms described a long arc. They held a well defined body-lean forward from the start to the finish of any race from 50 to 250 meters. Tolan ran very erect. He pumped his arms and legs furiously. Without the power and strength of the first mentioned pair, without the grace and ease of Owens, he became

coholder of the 10.3 mark. Jesse Owens brought a new quality into running. His 164 pounds gave him power, yet he was not able to hold a forward lean throughout the race to gain the most from that power. He had an easy grace that has never been surpassed. He did not pound or drive his feet into the track. He caressed the running surface. One gained the impression the track was moving rapidly under Jesse's feet and that he was merely lifting his feet rhythmically to allow it to flow smoothly along. His arm and leg motion was so perfectly timed that his action seemed effortless. This coordination enabled him to lower the 100 meter mark one tenth of a second. At 200 meters around one curve in Berlin it was responsible for removing a full half second from Tolan's 1932 record. Undoubtedly the seven foot stride is a valuable adjunct in this race around the curve. Simpson and Metcalf were great 200 meter men on the straight. When there was a curve to negotiate their longer strides made the arc appear to be a series of jagged lines rather than the smooth sweeping curve which Jesse ran.

In spite of the fact that Owens and Tolan, the winners of the sprint races in the past two Olympiads, were both erect runners (very slight, if any, forward lean) it is very probable the new record breaker will be a runner with plenty of body angle, Owens undoubtedly pulled with his lead leg during that short interval before his center of gravity passed over the foot which was in contact with the track surface. Tolan and Charlie Paddock also were sprinters who used the pulling action before the drive took place. It is my contention that forward lean would have made all of these runners swifter. Both the pulling and pushing action of the erect sprinter is diminished necessarily by the body position. It seems reasonable to believe that a sprinter will come along who possesses the nervous and physical attributes necessary for record breaking, and who has been trained in youth to acquire a forward driving angle. If he then can gain the perfection of timing that was Owens' chief attribute, he will have perfect technique.

To sum up the qualifications necessary for breaking the present record let us enumerate the best features of the sprinters mentioned here. We are assuming that it is humanly possible to break the present record. We must also assume that this new champion who is to possess all the good qualities of past champions will be fortunate enough to be favored by record breaking weather conditions on the day or days he is faced with championship competition. He will need all the wind following him that is possible within the rules for record breaking. He will need warm weather, probably great humidity and a fast track. The timers, judges and surveyors must be experienced and competent. The starter must have the respect of the International Federation as well as the confidence of the runners or no record will be allowed. Records set in small meets or "publicity" meets are always under suspicion. The new champion will have only a very few chances for record breaking performance. To become the record holder at 100 meters, time 10.1 or 10 flat:

1. Reaction time as fast or faster than Metcalf or Yoshioka.
2. The ability to gain momentum swiftly as did Owens and Yoshioka (correct technique in starting.)
3. Condition, or physical fitness; he must be so trained that he is mentally and physically ready to carry the full distance in perfect sprinting form. Owens, Metcalf, Tolan, Simpson, Wycoff.

4. Physique; no particular requirements as to height or weight. Must have highly keyed nervous system plus full development of running muscles. Fine respiratory, circulatory glandular and elimination systems. Entire body must be so warmed-up that every system functions perfectly during the championship effort.
5. Running technique; he must possess the ability to hold his running form so that every action tends to drive him in a straight line. Owens, Metcalf, Simpson, Wycoff.
6. Speed, sheer speed, either native or acquired. Any past champion with Metcalf the outstanding example.
7. Timing; the actions must flow together so naturally that the result gives the impression of flowing rather than fighting. Owens.
8. Body angle like this /, 65 to 70 degrees rather than erect, like this |. Metcalf, Simpson, Jeffery — as compared to Owens, Tolan, Paddock. The body angle must be constant after the runner has gained full momentum and such a line will touch the runners heel, calf, buttocks, back and back of head. Tension must not be allowed to pull the head further back or to straighten up the body. Owens at times was able to hold a slight forward lean throughout the race.
9. Concentration. The runner must be conscious of no outside factors save the starting gun. He will be a champion only when focused on his own technique throughout the full 100 meters. He must run through the yarn not to it. The bite of the worsted on his chest will snap his concentration. There must be no gather for a jump at the finish line — run through. Metcalf, Owens, Wycoff, Simpson.
10. Arm action — powerful.
11. Relaxation — absence of tension throughout the race.

Undoubtedly there are other qualifications that a champion possesses or will acquire in the future. Jesse was gradually learning to carry a greater forward lean in practice efforts. His arms were describing a longer arc than when he first came to Ohio State University. This had to be done carefully so as not to destroy the precision of timing that was an inherent quality. Had he been able to continue his training and running after the last Olympics, would this improvement in technique have enabled him to go still faster? It seems likely. That is why the belief persists that the new champion must possess greater body lean and stronger arm action.

Bedingungen für einen neuen Weltrekord im Lauf über 100 m

Von Larry Snyder, Ohio State University, Columbus (Ohio)

Der nachstehende Aufsatz ist der zweite in der Reihe amerikanischer Fachleute, die wir zum Gedankenaustausch sporttechnischer und wissenschaftlicher Art aufgefordert haben. Die Vereinigten Staaten leisten damit auch den geistigen Tribut, nachdem sie den Spott praktisch um manche Stufe höher gerückt haben. Wir werden diese Reihe noch fortsetzen.

Wir wollen vor allem einmal annehmen, daß es menschlich möglich ist, den jetzigen Rekord von 10,2 Sekunden im 100-m-Lauf zu verbessern. Fis ist eine reine Mutmaßung. Wissenschaftliche Untersuchungen an einer amerikanischen Universität haben eine Folge von Standardleistungen ergeben, die den vollendeten, und zwar letztmöglichen Rekord im 100-m-Lauf mit 10,06 aufweisen. Solche Listen oder Tabellen bleiben jedoch immer theoretisch und könne-n niemals entscheidend sein, wie es die Tatsache beweist, daß der Deutsche