

Muscles That Make The Golf Stroke

An Interesting Study of the Mechanics of the Golf Swing from the Anatomical Standpoint

By A Physician

CONSIDERABLE assurance is required to attempt a new point of view in a description of the golf stroke, but by approaching the subject from a different angle we hope that points of interest and advantage may be developed.

That the distance attained in driving a golf ball is due to the speed of the club head at the time of contact with the ball is generally conceded. Much has been written describing the best way to accomplish this result, but we wish to invite attention to a consideration of the various muscles and articulations involved in the stroke as we believe such consideration may be of service.

We shall not attempt to discuss the various types of "grips" or "stances" but will assume that those taught by the leading professionals and generally accepted are the best available.

We may then proceed to consider the general relation of the club to the player and naturally the relation of the hands comes first as they form the connecting link. Just here we wish to observe that in addition to the type of grip the degree of tension in grasping the club is of great importance and anything approaching rigidity should be carefully avoided in the driving stroke.

The wrist joints are the first articulations above the hands and we find the expression "snap of the wrist" used frequently in articles on golf. These joints are controlled in their action by muscles largely located in the upper forearm and are connected by long tendons with the bony structures of the wrist and hands. Flexion and extension of the fingers as well as the wrist joints are functions of these muscles and the type of joint as well as the arrangement of tendons and muscles related to their action are such as to make any motion resembling a "snap" practically impossible as a result of such action.

As flexion and extension are the only movements of importance possible at the wrist

—the lateral movement being so slight as not to require consideration—let us try to determine how far this action is of value.

If anyone will grasp a golf club and make his arms and forearms rigid and attempt to strike a golf ball by flexion and extension of the wrists we are sure that he will be convinced that this action alone is so ineffective that it cannot be important.

The Twist of the Wrist

LET us next consider the twisting of the wrists in their relation to the stroke. Pronation and supination of the forearm are accomplished by the rotation of the bones of the forearm at the elbow joint and although controlled by a comparatively powerful set of muscles it can again be demonstrated no very powerful impulse can be imparted to the ball by this action alone. If the arms above the elbow are fixed in their relation to the chest and an attempt is made to drive a ball by a rotation of the wrists or by a combination of flexion and extension together with rotation no satisfactory result can be obtained or one that would appear to be of importance except as related to other action.

Conceding that the wrist joints and the muscles controlling them cannot independently originate any movement resulting in a "snap of the wrists" such action must be the result of muscles and joints above this point and directing attention to this "snap" action without explaining its source leads to confusion and misdirected efforts in attempting to secure it.

Furthermore if the wrist joints are considered merely as a hinge allowing free lateral movement to the club a freedom from rigidity will be encouraged which is much to be desired.

"Pivoting at the hips" is another phrase frequently found in describing the golf swing and in our opinion is misleading as the transferring of the weight is much more important

in adding force and speed to the swing. In this connection it may be said that many of the best teachers advocate keeping the right knee straight and the heels firmly on the ground until contact of the club with the ball has ceased; if this can be accomplished "pivoting" cannot be considered as of vital importance.

While we willingly concede that the "snap of the wrists" and "pivoting of the hips" are necessary parts of the conventional golf stroke we believe they should be the unconscious result of a properly conceived swing and the "pivoting" is important in permitting the proper transference of weight to the left foot which insures the "follow through."

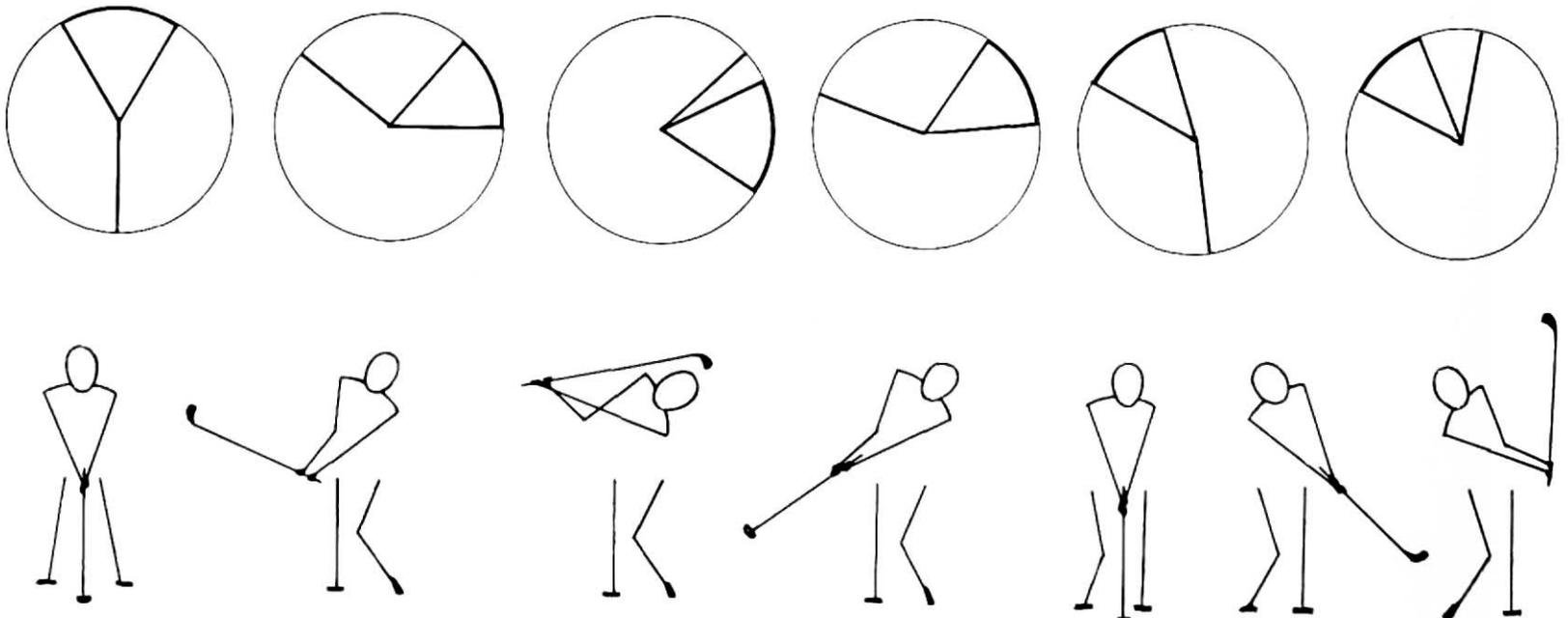
We arrive by a process of exclusion to a consideration of the importance of the shoulder joints, chest and back in their relation to the swing. The muscles of the thorax and shoulders acting from the hips as a fixed point are the most powerful in the human frame for the purpose of imparting a striking or throwing motion to the arms and hands. By a rapid rotation of the shoulders this swinging or striking motion is imparted to the club through the arms and hands and such action is responsible largely if not entirely for the speed of the club head during the stroke.

Assuming that our conclusions regarding the action of the various anatomical structures are correct, it remains to consider details of the conventional golf swing in order that we may have a definite picture of what we wish to accomplish.

An Illustration

FOR purpose of illustration the arch of the shoulders may be compared to a section of the rim of a wheel and the arms to two spokes converging to the hub. The club is represented by another spoke extending below from the hub and freely movable laterally at its connection with the hub.

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A graphic representation of the functions of the arms and club, showing just how they move in the golf swing as outlined at certain periods

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CONSIDER this rim section as swinging back and forth on an axis located in the rim midway between the attachment of the upper spokes; and the flail-like movement will be imparted to the lower spoke. This is just the movement we wish to imitate in the golf swing.

In attempting this type of stroke conscious effort should be directed to rotation of the shoulders and thorax on the spinal column as an axis. In the back swing the left arm should be kept nearly straight, the right arm close to the chest, the wrist joints relaxed with the fingers gripping the club lightly. The left wrist should turn inwards towards the body and as a result the club head is carried along the ground backward, inward and finally upward until the shaft is about parallel with the ground, the head pointing slightly forward over the left shoulder. The right knee should be straight and the left at this point is slightly flexed and rotated in towards the right.

In the down swing the movement should be started by a conscious effort to rotate the left shoulder for-

ward. The wrists should remain relaxed and the movement may be described as "throwing" the club head at the ball as though it were only connected to the hands by a cord.

If this action is properly accomplished the pronation and supination of the forearms will be accomplished naturally and more or less automatically. The same holds true of the pivoting at the hips and the transference of weight to the left foot.

When the flail-like action before referred to is consistently carried out the timing is so correct that much greater speed may be attempted in the swing without throwing the various elements out of gear. Having attempted to describe a system for making the stroke the important consideration for the average player is "will it work?"

Much depends upon the ability of the individual to follow directions and the patience and perseverance in mastering the details.

When a prominent professional confesses to taking nearly a year to master the overlapping grip the necessity for patience should be evident.