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Apparatus and Method of Dynamic Inertial Balance for Golf Clubs

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Invention Description

Arizona State University researchers have developed a dynamic inertial balance device and methodology designed to meet the need to match the behavior of golf clubs during the swing. This device was developed directly from biomechanical research conducted at ASU. It duplicates, or exceeds, the ability of an expert golfer with a "grooved swing" to match their clubs to one another. With the mechanical variation minimized between clubs, each swing will give feedback to the golfer pertaining to their swing motion, making it easier to learn the game of golf. The expert will be able to swing the same way no matter which club is being used, and be confident in the results. The manufacturer will be able to sort their clubs more finely than manufacturing tolerances allow, creating matched sets that help golfers of all ability levels play more consistently, and have more fun.

Potential Applications

The invention has application for golf club manufacturers seeking to create dynamically matched sets of golf clubs, as well as for individual golfers who want to create a set of clubs with a unique set of balances. A club manufacturer using this system could ensure their sets were more fully balanced than is possible via manufacturing tolerances and static weighing alone. Additionally, the system would allow existing clubs to be matched far more accurately than the current method of adding lead weights to grips and heads and comparing “feel”.

Benefits and Advantages

The key benefit this technology offers is the ability to create a truly balanced set of golf clubs. When the clubs are fully balanced, a golfer is assured that each club will respond as expected during the swing, helping the golfer develop the key attribute of repeatability. When one or more clubs in the set differ significantly in their moment of inertia, this unexpected difference can cause problems for many golfers.

Current systems use swing weight scales to balance clubs. While this can match clubs in static form, these same statically-matched clubs may exhibit very different swing behavior in motion due to differences in materials, club length, and mass distribution – as such, these ‘matched’ clubs are not dynamically balanced. In contrast, this system analizes the properties of the club in motion, and does so in a more time-efficient manner than more cumbersome pendulum-based systems.