

The Forgotten Foursome



*PCS Task Force:
Fitting the Physically
Challenged Golfer*



the
**Professional
CLUBMAKERS'
Society**

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September, 1996



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THE FORGOTTEN FOURSOME

A Report from the

PCS Task Force:
Fitting the Physically Challenged Golfer

This manual is dedicated to

Greg Jones, Executive Director of the Association of Disabled American Golfers, for inspiring this program.

Alex Pali, Chairman of the TASK FORCE FOR FITTING THE PHYSICALLY CHALLENGED GOLFER, for his unwavering dedication to this program.

Dr. John Guarnashelli, my surgeon, for giving me a chance to play again.

And last, but certainly not least, to God for His gift of courage, determination, optimism and appreciation for our many blessings.

A Word of Introduction

It's pretty safe to say that the majority of us live a life of tunnel vision. Unless forced into a situation which sidesteps our normal day-to-day experience, we can't fully understand or appreciate how others spend their lives and the challenges they face.

In 1989 I was blessed, yes blessed, with a car accident resulting in a broken neck. Facing an 80% chance of paralysis from the neck down I entered into surgery and a journey that truly touched and enriched my life.

Living for several weeks in a rehab center while working to regain the use of my legs and arms, I learned so much about life. .. and how much we take for granted. But more importantly, I learned about courage, determination and the daily challenges faced by the physically disabled.

Gratefully, I recovered almost 100% from my injuries. I cannot remember the pain and anguish I experienced, but will never forget the brush I had with disability. I guess this is what bonded me so quickly to Greg Jones, Executive Director of the Association for Disabled American Golfers (ADAG). I was emotionally in Greg's shoes when we played our first round of golf together in 1994.

This was my first experience in playing golf with a handicapped individual and I was very impressed. The thought of Greg, bound to a wheel chair, able to enjoy the great game of golf, too! Greg would drive up close to the ball, transfer to his crutches, take his stance, drop his right crutch, steady himself with his left crutch and take a strong and deliberate swing. He putted standing with crutches equipped with special rubber cups to protect the surface of the greens.

Greg is no different than any able bodied golfer. He smiles when he hits a great shot. He frowns when he shanks, hooks or slices. He plays by the rules and displays good golf etiquette. He doesn't see his physical condition as a handicap, rather as a challenge to his particular limitation.

The Association of Disabled American Golfers

August 29, 1996

Ms. Diane Ogle
Executive Director
The Professional Club makers' Society
70 Persimmon Ridge Drive
Louisville, KY 40245

Dear Diane:

Thank you for attending our National Tournament and for conducting the club-fitting program. Having a set of clubs matched to my game sure has helped improve the scores.

I'm sure you and Alex were a bit surprised at the varieties of disabled golfers you met at the event. Certainly, a disability is only an inconvenience, when it comes to playing this great game.

The project The Professional Clubmakers' Society is working on is simply good for the game. The data being gathered now will set the stage for what I believe will be an expanding market. As our population ages, more golfers will benefit from today's efforts.

Again, it was good to see you, and I look forward to your participation in our next event.

Sincerely,



Gregory Jones
Executive Director

7700 E. Arapahoe Road, Suite 350
Englewood, CO 80112
Tel: (303) 220-0921 - FAX: (303) 843-9284

National Center on Accessibility
Recreation Parks Tourism

August, 1996

Dear PCS Member,

On behalf of the National Center on Accessibility, we are delighted to learn of the publication of this resource on golfers with disabilities. We believe that the emergence of golfers with disabilities to be the next significant development in "new participants" to the wonderful game of golf.

Golfers with disabilities are like all other golfers--interested in participating fully and to maximizing the ability that they have to be successful. As members of the Professional Clubmakers' Society, you can and will play a significant role in assisting golfers with disabilities in meeting their playing goals. The work being done by your Society in developing criteria and guidelines for "fitting" golfers with disabilities with appropriate equipment is essential. Because of the diversity of ability levels and swing styles, your equipment specifications for golfers with disabilities present both a challenge and an opportunity.

As a national organization committed to educating, researching and providing technical assistance to the "game of golf" we at the National Center on Accessibility applaud and support your efforts and commitment to making the game better for ALL.

Sincerely,



Gary M. Robb
Director

A Program of Indiana University
Department of Recreation and Park Administration
Located at Bradford Woods Outdoor Center
5040 State Road 67 North, Martinsville, Indiana 46151
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Acknowledgments

A very special thank you goes out to the following companies who donated components which the committee utilized for their initial case studies.

This generous gesture is appreciated by the PCS, its members and those who have or will in the future benefit from the work of this special *PCS Task Force*.

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A Word of Introduction

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As Greg and I became better acquainted, we recognized that clubmakers were in a position to work individually with golfers with limitations. What a perfect fit! As a result, the Professional CLUBMAKERS' Society (PCS) formed a TASK FORCE FOR FITTING THE PHYSICALLY CHALLENGED GOLFER. During the 1995 PGA Merchandise Show in Orlando, Florida, representatives from the PCS, ADAG, LPGA, Electric Mobility, Clemson University and others met to discuss the goals for this project. Alex Pali, PCS "Class A" member from Downingtown, Pennsylvania, volunteered to chair the task force.

The PCS committee has been working for more than a year compiling recommended fitting and building specifications based on their case studies. This manual is a compilation of data gathered to date and is available to all PCS members as a reference manual. All PCS members are encouraged to seek out those with physical limitations and to send in their recommendations with photographs for inclusion in the next publication of this manual.

Golf associations take on various pet projects. I am proud that the PCS has undertaken the task of working to help those with varying degrees of limitations. As the TASK FORCE FOR FITTING THE PHYSICALLY CHALLENGED GOLFER continues its fine work, the Professional CLUBMAKERS' Society will earn the respect and appreciation it so richly deserves.

Diane Ogle
Executive Director, PCS

Our Mission

The PCS TASK FORCE FOR FITTING THE PHYSICALLY CHALLENGED GOLFER is dedicated to:

- I. Developing practical methods of evaluating the golf club equipment needs of physically challenged golfers.
- II. Collecting club fitting case histories in order to develop recommendations for methods, procedures and fitting specifications for certain disabilities.
- III. Providing PCS clubmakers with information to assist in fitting and construction of golf clubs for individual physically challenged customers.

Golfer's with Disabilities: An Opportunity to Make a Difference

by Gary M. Robb, Director
National Center on Accessibility
Indiana University

The game of golf is presently enjoying tremendous popularity throughout the world. Once considered a leisure activity for the elite, golf is now enjoyed by literally every socio-economic class throughout the world. The National Golf Foundation (U.S.A.) has reported that approximately twelve per cent (12%) of the U.S. public plays golf. The popularity of the sport as a lifetime pursuit is growing annually as evidenced by the tremendous expansion in golf and golf-related industries. The number of people playing golf is growing each year. The latest study by the National Golf Foundation (1996) shows that the number of players in 1995 grew by 3%. Over 25,000,000 people played in 1995 with the total number of rounds played increasing over 5% to 490 million.

Golfers who have disabilities represent a very small, but growing number of those participating in the game. Due to the passage of the American's with Disabilities Act (1990), the USA is perhaps leading the way in looking at issues involved in making golf accessible to people with disabilities. A number of organizations such as the Association for Disabled American Golfers, U.S. Blind Golfers Association and the National Amputee Golf Association are providing the opportunities for golfers with disabilities to enjoy the competitive aspects of the game.

In keeping with the intent of accessibility legislation, a major focus is to encourage golfers with disabilities to take up the game for recreational purposes and to fully integrate into the "golfing community," not so much through competitions, but via community based golf programs and opportunities that are available to the general public.

As a result of the growing interest on the part of people with disabilities to play the game, a number of initiatives are under way to assist both the golf industry as well as

the golfer with a disability to maximize the golf experience for all. Several organizations and programs are taking the leadership in addressing various issues that surfaced. Briefly, they include:

1. The National Forum on Accessible Golf: an annual forum focusing on specific issues. Includes approximately 40 invited individuals representing golf organizations, organizations serving persons with disabilities and golfers with disabilities. Sponsored by the National Center on Accessibility and Clemson University, proceedings are published and are available on each of the five forums held since 1993.
2. The National Center on Accessibility has conducted a seminar on Etiquette and an Instructional clinic for golfers with disabilities in conjunction with the Association of Disabled American Golfers, an introductory brochure that provides information to golf course operators and a proceedings on the Etiquette Seminar have been printed and are available without charge.
3. The Association of Disabled American Golfers (ADAG) conducts national and regional integrated golf tournaments; publishes a quarterly newsletter and is generally available to provide consultation and technical assistance to both the golf industry and golfers with disabilities. It is currently in the process of developing a World Wide Web Internet page to provide an international electronic clearing house on golf and people with disabilities.
4. The National Association of Amputee Golfers and the United States Blind Golfers Association conduct local, regional and national tournaments for their members. NAGA, with support from the PGA of America, offers instruction for therapists, golf professionals and golfers with disabilities.
5. The PGA of America and Special Olympics, Inc., offers instruction and tournaments for "special Olympians."
6. The United States Golf Association is reviewing the Rules of Golf to determine possible suggestions that would be provided to its membership that would more fully include golfers with disabilities into local golf competitions. In addition, the USGA Foundation has lent financial support to a number of projects related to golfers with disabilities including the National Forum on Accessible Golf.

7. Numerous adaptive golf programs that are affiliated with rehabilitation recreation programs are in existence or are developing. A listing may be obtained from the ADAG or the NCA.
8. PGA and LPGA golf professionals are now offering instructional programs and clinics for golfers with disabilities. The PGA of America maintains a list of these professionals and the ADAG and the NCA have also had extensive involvements with PGA and LPGA professionals who are providing instruction to golfers with disabilities.
9. The LPGA has created a National Advisory Committee for Accessible Golf.
10. The Professional CLUBMAKERS' Society initiated a committee to address the unique club fitting requirements of individuals with disabilities.

Perhaps one of the most significant developments in allowing more and more golfers the opportunity to play the game (or continue to play the game) is in private sector technology. For persons with mobility impairments, the ability to get around the course safely and keeping with the pace of play are paramount. In addition, having the opportunity to access as many different areas on the golf course as possible (tees, greens, hazards). One of the more significant developments in recent years has been the progress that the single rider golf car has made in addressing the needs of golfers with mobility impairments. There are several companies that are designing modifications and testing their products to insure their safety and usability as well as their turf friendliness. Many of these modifications have originated in the United Kingdom and are being adapted to American products. Other personal assistive devices such as wheelchairs and scooters are also being modified to be used on the golf course. Golf clubs, teeing devices, golf balls and a myriad of other products are being introduced that may or may not be designed specifically for the golfer with a disability, but will certainly assist them in playing the game.

Research results will play a role in assisting golf courses to make appropriate decisions and to assist golfers with disabilities to enjoy the game more. Golf course operators are, for example, often concerned about the potential damage to turf grass as a result of mobility devices, golf cars, crutches, spikes, etc. Currently, the USGA, PGA of America and the GCSAA have funded a study to Rutgers University for a study to "Assessment of Testing Materials for Service Bearing Strength of Golf Course Putting Greens." The results of this study should begin to help golf course operators to establish policy related to wheeled and other traffic on greens surfaces under specific atmospheric conditions.

Another question often asked by golf course industry officials is "How many disabled golfers or potential disabled golfers are there?" The National Golf Foundation, the National Center on Accessibility and Clemson University are involved in studies to determine numbers and level of interest of people with disabilities. During the 1994 and 1995 ADAG National Tournament held in Denver, the National Center on Accessibility conducted Pace of Play studies to determine what the relationship of people with different ability levels has on the pace of play. Results of these studies are available from the NCA.

Interest in actively participating in the game of golf is at a record high in America. People with disabilities are just beginning to realize that opportunities exist in the game of golf, in many cases with the assistance of emerging technologies. The golf industry views the "disabled golfer" both as an opportunity and as a potential problem. Interest and educational opportunities for golf industry personnel are growing. Numerous articles are appearing in golf magazine and journals. More and more golf course superintendents and golf professionals are recognizing the need to learn more about the potentials and opportunities that golfers with disabilities represent. They also recognize that research and information on issues related to golfers with disabilities will better prepare them to effectively incorporate golfers with disabilities into their daily operations. All of this represents opportunities for clubmakers to both promote the inclusion of golfers with disabilities into the game and to assist them in maximizing their abilities.

Author note: Additional information on resources, research and activities cited in this article may be received from the National Center on Accessibility, phone: 800-424-1877 (Voice/TTY)

Clubmaking Suggestion for Golfers with Disabilities: A Teacher's Point of View

By Judy Alvarez, PGA/LPGA Golf Professional

When I was asked to write this article about fitting clubs for people with disabilities, I had to stop and think about it for a minute. See, to me, teaching golf to the disabled is not any different than teaching golf to the able-bodied provided you are very creative and open-minded.

Every person that has a disability or injury is affected differently. There are so many factors to consider. For example:

- Did they have a stroke recently or seven years ago? This attributes to balance, attitude, and endurance.
- Do they have 100% grip strength or partial? This affects grip size.
- If they are right handed and had a stroke on the right side, do they have any range of motion or gripping ability or will they have to swing from the left side?
- How is their balance? This will affect weight distribution and power.
- Can they take a swing leaning on one or two legs? This might affect balance and length of swing.
- Is the golfer a complete or incomplete paraplegic? This might affect the size of the club head.
- Is the golfer completely blind or partially blind? This might affect the size of the club head.
- Is the golfer extremely strong in the upper body or very weak? This might affect the shaft flex.
- Did the person play golf prior to injury or illness, or are they new to the game of golf?
- If the person has Multiple Sclerosis, Cerebral Palsy, Parkinson's Disease, etc, how far along are they? Are they in the beginning stages where balance and coordination has not been affected yet? Or are they far enough along where balance, coordination, breathing and the heat are affecting them?

- If they have Post Polio Syndrome, can they swing from a sitting position or standing? This might affect the lie of the club and the shaft flex?

Overall club fitting suggestions:

- fit to lie
- perimeter weighting (preferable)
- if they have a restricted range of motion, try lighter clubs with a heavier club head
- if they have a slow club head speed, try lighter clubs
- match the shaft flex to their swing speed
- remember, if the golfer is in a sitting position, chances are they will need flatter clubs
- usually people with poor balance are better off using longer clubs to avoid having to bend over
- if someone will be swinging from a sitting position and will be swinging from the side, chances are they might need clubs 22"-24" be creative

These are just a few of the factors to take into consideration when working with someone who has a disability. Treat each golfer as an individual. You will have to experiment in some areas. People with disabilities tend to move at a different rate than any other golfer. Put the person before the disability. Remember to say "a golfer with a disability" not "disabled golfer." Say, "John uses a wheelchair" not "John is confined to a wheelchair." Say "Joyce had a stroke" not "Stroke victim." People with a disability or an illness are just like you and I and want to be treated with respect, just like you and I. Until next time...
Keep up the good work!

Judy Alvarez is a PGA/LPGA Golf Professional, Board of Directors for Association of Disabled American Golfers, LPGA National Advisory Committee for Accessible Golf and President of Alvarez & Associates, Inc., golf consultants. For more information call (954)753-2753.

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AMPUTEES

- . Left Arm Missing
- . Right Arm Missing
- . Wooden Right Leg

**Amputee
Missing**

Left

Arm

PCS Clubmaker: Jim Goodwillie
Golfer: Susan Rivard Age: 45

GOLFER'S RANGE OF ABILITIES:

Susan is 45 years old, 5' 4", and weighs 120 pounds. She is an amputee and a beginning golfer who practices and plays one to two times a week. She owns her own business. Her best round has been 125 for 18 holes.

GOLFER'S RANGE OF LIMITATIONS:

Susan is missing her left forearm and hand. She swings her left arm in tandem with the right, but does not place it on the club. Her grip pressure is average for a lady. Her lack of distance is acute and she tends to push most shots. Her balance is good. She regularly chokes down on all clubs no matter what length.

FITTING OBJECTIVE:

We want to produce clubs that will allow her to achieve maximum distance. Direction is somewhat of a problem. Trajectory is a little low and we need to raise this. Extremely light clubs are a must for distance and control.

RECOMMENDED FITTING PROCEDURE:

Take the following measurements:

1. Length of arm.
2. Distance from knuckle of right hand to ground.
3. Distance from butt of club to ground.
4. Distance from stomach to butt of club (#5 iron).
5. Range of shoulder turn.
6. Angle of club at top of backswing from parallel.
7. Swing speed for driver and #5 iron.
8. Lie as determined from lie board.
9. Note average length of drive.
10. Note average length of #5 iron shot.
11. Grip size.
12. Take specs from current set.

Amputee

Left Arm Missing

FITTING SPECIFICATIONS DETERMINED:

- | | |
|--|--|
| 1. Arm length | - to be determined |
| 2. Knuckle to ground | - to be determined |
| 3. Butt to ground | - to be determined |
| 4. Distance from butt of club to stomach | - to be determined |
| 5. Shoulder turn | - 80 - 85° |
| 6. Angle of club at top | - 75° |
| 7. Swing speed (3 wood) | - 54 MPH |
| 8. Swing speed (5 iron) | - 50 MPH |
| 9. Lie (5 iron) | - 2° flat (58°) |
| 10. Length of average drive | - 80 yards |
| 11. Length of average 5 iron | - 40 yards |
| 12. Grip size | - ladies +1/32" |
| 13. Club length | - Driver: 40 1/2"
- 5 iron: 36"
- PW:34" |

RECOMMENDED COMPONENTS:

Head: Woods - Metal, standard size heads, 1° closed face angle, weak lofts (12-13° driver), (no #1),3,5,7,9.

Irons - Cavity back, weak loft, 2° flat, 4-PW

Shaft: Graphite, L flex, similar to Fiber-X Lady

Grip: Golf Pride Velvet Lite

Length: -1/2" lady standard

LIST CLUBS MADE FOR THIS GOLFER:

None to date. Specifications listed.

SPECIAL CLUBMAKING TECHNIQUES USED:

Not applicable.

TOTAL HOURS FITTING AND MAKING CLUBS:

Three hours for fitting and "specing" her current clubs.

FITTING/EQUIPMENT FEE RECOMMENDED:

None.

Amputee

Right Arm Missing

PCS Clubmaker: Martin Williams
Golfer: Alan Brunges Age: 28

GOLFER'S RANGE OF ABILITIES:

Alan has very limited upper body movement as he only has use of his left arm.

GOLFER'S RANGE OF LIMITATIONS:

Only 8-9 month's experience, very limited as to movement and timing.

FITTING OBJECTIVE:

Kept it as simple as possible due to his limited experience. The main objective was (N° 7) weight of clubs (N° 2) length of clubs.

FITTING SPECIFICATIONS DETERMINED:

Flat lie - 1/64 over gent's grip size. 1/2" under standard length, played at C8 swing weight.

RECOMMENDED COMPONENTS:

Head: Dynacraft BFC

Shaft: Apollo Acculite

Grip: Eaton Victory

LIST CLUBS MADE FOR THIS GOLFER:

#3 to #8 R/hand, #9 PW-SW L/hand

SPECIAL CLUBMAKING TECHNIQUES:

Found he could gain more accuracy with short clubs, i.e. 9 iron, P IW and S IW swinging them to the left. He could cope better with longer irons swinging them to the right.

TOTAL HOURS FITTING AND MAKING CLUBS:

5-6 Hours

FITTING/EQUIPMENT FEE RECOMMENDED:

The fitting fee is free of charge (as always). The equipment was also free of charge as part of a sponsorship.

**Amputee
Leg**

Wooden Right

PCS Clubmaker: Russell Swanson
Golfer: John Age: 81

GOLFER'S RANGE OF ABILITIES:

Golfer has use of left leg and both arms, full sight and hearing, can make almost full swing and has ability to get club face almost square, good hand/eye coordination from years of play.

GOLFER'S RANGE OF LIMITATIONS:

Golfer has wooden leg (right side), back pain, arthritis throughout body. Hands almost crippled.

FITTING OBJECTIVE:

Create a club that is light enough to swing with so much arthritis and one that the golfer can hold onto with crippled hands.

RECOMMENDED FITTING PROCEDURE:

Customer must hit balls so that the disability can be observed. Use swing analyzer to determine club head speed and club face angle at impact. Determine proper lie with dynamic lie fitting board. Measure hands for special grip.

FITTING SPECIFICATIONS DETERMINED:

Use the lightest possible ultralite graphite shaft, this adds the softest flex available - 2° closed club face to *get* club square at impact. Good hand/eye coordination will allow 1" over length. Grips are leather-wrapped to create unusual grip configuration. Some fingers can close, others cannot.

RECOMMENDED COMPONENTS:

Head: Dynacraft 195H 2° hook

Shaft: Aldila HM30 Superlite

Grip: Leather specially configured with soft build-up materials in different areas.

Amputee

Wooden Right Leg - *con't*

LIST CLUBS MADE FOR THIS GOLFER:

1,3,5 and 7 woods

4-PW irons and sand wedge

SPECIAL CLUBMAKING TECHNIQUES:

Leather straps are wrapped over specially configured soft build-up materials, otherwise, the actual clubbuilding is no different than any other customer. Clubs must conform to USGA Rules. I do feel, however, that the fitter must have exceptional swing analysis skills to properly determine what it is that this golfer is or is not able to do with his unique swing.

TOTAL HOURS FITTING AND MAKING CLUBS:

5-6 hours.

FITTING/EQUIPMENT FEE RECOMMENDED:

Same as any other customer.

ARTHRITIS

- . Article "Fitting Arthritic Golfers"
- . Severe-Both Hands/Short Fingers

FITTING ARTHRITIC GOLFERS

By Steve Westfall, Club Connection Golf

GRIPS

Grips are usually the first club modification that comes to mind, and rightly so. Many types of arthritis affect the fingers, hands, and wrists. The joints may be so stiff and/or sore that closing the hands on a standard size grip is *too* painful. Larger grips are simply more comfortable. The grips of 1/16" to 1/8" (or larger) oversize are common. Size is not the only consideration, however. Grips need to be of a material that is softer on the hands and allow for more shock to be absorbed before reaching sore joints. The quality of the rubber is just as important as size. Avon makes a good "air cushion" grip and Ping (*rumor* has it) is developing a special material that absorbs ten times the shock of anything currently available.

In severe cases, or when the hands have been significantly weakened, holding on to the club might be a problem. Gloves on both hands may be helpful. Wrist braces, usually the soft wrap type with reinforcement may also help. Clubfitters can suggest that Velcro strips be glued to the grip and to the palm of the left golf glove. Also, there is an epoxy-like material that can be wrapped around the grip. Before the material sets up (with golfer wearing thin gloves) the golfer grips the club in the address position and an impression of the fingers is made. When set, there is a "cast" of the fingers (much like a training grip) to help with holding the club. Physical therapists are a good source for this type of information. Therapists order such material from medical catalogs for braces, special devices, etc.

SHAFTS/HEADS

Arthritis patients not only must deal with painful joints, but just as often must also cope with a loss of flexibility and muscle strength (because exercise can be a problem). Their swings become restricted and less fluid. Therefore, golf club *total weight* is important. Lightweight shafts (of all materials) reduce total club weight which should be easier for arthritic golfers to handle. Clubhead weight is, of course, also a major factor in total weight. Club fitters already know that lighter weight clubs can lead to more swing speed. If a lighter club can help the golfer produce more clubhead speed, then he or she may be able to regain some distance lost due to the loss of flexibility and strength.

If clubfitters find golfers in a situation of less strength, lower clubhead speeds, restricted swings, etc., more flexible shafts must be a consideration. Standard fitting techniques for shaft selection can be used. However, fitting arthritic golfers in shafts that are even more flexible than their swing speed would otherwise indicate can be beneficial. Stiffer shafts are well known for their "dead" feeling when used by someone who does not generate sufficient clubhead speed to make the shaft "work." They feel like you are "hitting rocks" and the shafts "sting" in the hands upon contact with the ball. As long as reasonable ball control can be maintained, the softer the shaft, the better. Also, shafts that have low flex points and/ or more "flexible tips" should be considered. There is one school of thought that says the lower the flex point, the more shaft there is left to help absorb vibrations transferred up the shaft to the grip.

SHOCK ABSORPTION & OTHER CONSIDERATIONS

As above, the reduction of shock waves that travel up the shaft to sensitive joints is a major consideration. In addition to the above, the following should receive attention by the clubfitter:

Graphite - Some club fitters believe that graphite shafts absorb shock better than steel, particularly in irons. This is probably true, and the softer the feeling the better. However, some clubfitters report that customers sometimes feel that the difference is negligible. Perhaps this has to do with just how sensitive the hands and arms are. Some people prefer some of the other alloy shafts (like those made by Easton and prefer them over graphite for vibration dampening). Test clubs will help make the decision.

Perimeter Weighted Heads - Clubfitters should consider perimeter weighted heads (woods & irons) for the effect that the weight distribution may have on vibration due to "increased sweet spot" size and the "feel" upon impact.

Arthritis con't

Fitting Arthritic Golfers-

Center of Gravity - Choosing a clubhead with a low center of gravity can be helpful. Lower CG's help get the ball airborne and reduce the need to take divots just to get the ball in the air. Less contact with the ground is a shock absorption bonus.

Spikeless Shoes - It may be out of the clubfitters league, but a suggestion of spikeless shoes may be helpful for those who are bothered by arthritis affecting the feet, ankles, and knees. Spikeless or the newer non-metal spikes can help keep walking comfortable and also reduce stress of twisting with golf spikes firmly in the ground.

Listen to the customer. As in most fitting situations, a little common sense applied to the above situations will help considerably. Adjustments in the arthritic golfer's equipment will go a long way in allowing him or her to cope with their physical condition. The idea is to put clubs in their hands that keep them swinging, keep them enjoying it, and keep them playing the game.

PCS Clubmaker: Alex Pali
Golfer: David J. Novelli Age: 74

GOLFER'S RANGE OF ABILITIES:

Single digit handicap golfer. Golfing experience 40+ years.

GOLFER'S RANGE OF LIMITATIONS:

Severe arthritis in both hands, problem holding on to the club. Very short fingers.

FITTING OBJECTIVE:

Build the lightest total weight club with D2 to D7 swingweight. Provide a grip to assist with arthritic problem.

RECOMMENDED FITTING PROCEDURE:

Detailed and accurate hand measurements taken in addition to club head speed and lie angle. A small mold was prepared to assist with building up grip size.

FITTING SPECIFICATIONS DETERMINED:

Initially we used an oversized putter grip turned sideways. Later, working with Royal Grip, an experimental grip was built.

RECOMMENDED COMPONENTS:

Head: Taylor Made Tour Burner (10 1/2°) driver

5 iron: Clubmaker Classic - "Just" club

Shaft: Wood - Grafalloy Nitro Flex ultralight

Grip: Royal Arthritic

LIST CLUBS MADE FOR THIS GOLFER:

Driver and 5 iron

SPECIAL CLUBMAKING TECHNIQUES USED:

Standard techniques. For grip, used old putter grip & build-up tape, very difficult. Royal Grip helped resolve this problem.

TOTAL HOURS FITTING AND MAKING CLUBS:

18 hours.

FITTING/EQUIPMENT FEE RECOMMENDED:

Woods \$100 each, Irons \$35-\$40 each 22

BLIND

. Blind Since Birth

Blind

Blind Since Birth

PCS Clubmaker: Alex Pali
Golfer: Carol Faxton Age: 43

GOLFER'S RANGE OF ABILITIES:

Beginning golfers. Able to swing and make the turn. Able to grip the club. Longest tee shot 60 yards.

GOLFER'S RANGE OF LIMITATIONS:

Blind since birth. Cannot mentally visualize the flight of a golf ball or a club swing pattern.

FITTING OBJECTIVE:

- To hit the ball constantly, eliminate miss hits, i.e. missing the ball completely.
- Tee- shots to 100/150 yards.
- Line up clubhead square to target.

RECOMMENDED FITTING PROCEDURE:

Measure person's height and finger tip to ground. Swing speed measurements were meaningless at this time. She required swing training and lessons.

FITTING SPECIFICATIONS DETERMINED:

Club length: Carol has a swing which automatically closes the clubface at impact, de-lofting the club which makes the ball difficult to get airborne. (Must do something to keep face open to be square at impact.)

RECOMMENDED COMPONENTS:

Head: 944 diagonal Balance/Chicago, IL Shaft: Grafalloy Lady Classic
Grip: Lamkin Training Grip (154G)

LIST CLUBS MADE FOR THIS GOLFER:

3 wood 14.5°, 7 iron

Blind

Blind Since Birth

SPECIAL CLUBMAKING TECHNIQUES USED:

Both clubs were 1/2-inch shorter than ladies' standard. The grip used was a training grip which was set so as the club head at rest (prior to the beginning of the backswing) appeared to be about 2° open.

TOTAL HOURS FITTING AND MAKING CLUBS:

4 hours, several hitting and teaching sessions were held.

FITTING/EQUIPMENT FEE RECOMMENDED:

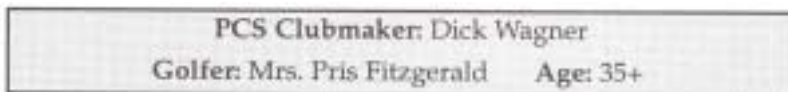
Difficult to quantify, the fitting was on a volunteer basis. I would have to charge about \$100.00 for the fitting and teaching.



Lamkin Training Grip 154G

GRIP DISORDER

- . Not Able to Close Hand
- . Cannot Grip Club

**GOLFER'S RANGE OF ABILITIES:**

Has no physical limitation except an inability to close the fingers of her right hand even on a jumbo-size grip.

GOLFER'S RANGE OF LIMITATIONS:

Limited only to closing right hand fingers except on custom size grips.

FITTING OBJECTIVE:

To enable the golfer to play golf without undue pain.

RECOMMENDED FITTING PROCEDURE:

Through a repetitive process of increasing grip-size on test shaft stubs until golfer was able to adequately grip the test stub without pain, then using the last test stub as a prototype for fitting grip on club in the golfer's set.

FITTING SPECIFICATIONS DETERMINED:

With this type of custom fitting, grip size specifications are strictly a "non-industry" standard. In this instance, build-up tape (2", 1" and 1/2") was used to increase shaft butt size diameters to the dimensions listed, before using two-sided tape and installing the grip (Golf Pride Tour Wrap M-58r).

RECOMMENDED COMPONENTS:

Head: Any

Shaft: Any

Grip: Any except full or 1/2 cord. The cord makes grip installation very difficult.

LIST CLUBS MADE FOR THIS GOLFER:

1,3,5,7 metal woods and 3 through SW irons.

Grip Disorder

Not Able to Close Hand

SPECIAL CLUBMAKING TECHNIQUES:

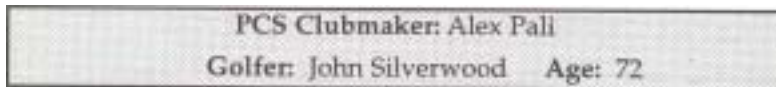
Nothing other than knowledge gained as a PCS "Class A" Clubmaker and several decades of clubmaking.

TOTAL HOURS FITTING AND MAKING CLUBS:

Custom grip procedure required 20 hours.

FITTING/EQUIPMENT FEE RECOMMENDED:

This golfer has been a family friend for more than 25 years and I charged her one big hug for the gripping and materials costs for the clubs. I do not normally charge these high rates.



GOLFERS RANGE OF ABILITIES:

Golfer has full use of all faculties. He is 72 years old, able to play 9 holes walking.

GOLFERS RANGE OF LIMITATIONS:

Cannot grip the club, he has problems holding on, loses his grip and the club flies out of his hands.

FITTING OBJECTIVE:

Retain the control of the club throughout the golf swing.

RECOMMENDED FITTING PROCEDURE:

We tried oversized grips and jumbo grips. Nothing seemed to help. Royal made about 100 arthritic grips which had a contour molded in for the palm of the hand. After the golfer was able to hold on to the golf club, we measured club head speed, lie angle required and used the determinate.

FITTING SPECIFICATIONS DETERMINED:

The grips helped but did not completely solve the problem. Working with a glove manufacturer, a stabilizing loop was added to the glove. This loop retained the butt of the club and assured proper fitting in the palm of the left hand.

RECOMMENDED COMPONENTS:

Reworked old clubs.
Head: Ping Eye 2 woods and irons
Grip: Royal Arthritic
Glove: Power Glove

LIST CLUBS MADE FOR THIS GOLFER:

Regripped woods and irons.

**Grip Disorders
Club**

Cannot

Grip

SPECIAL CLUBMAKING TECHNIQUES USED:

Used the Royal arthritic grips and the Power glove.

TOTAL HOURS FITTING AND MAKING CLUBS:

2 hours.

FITTING/EQUIPMENT FEE RECOMMENDED:

Grips are no longer available, they were donated by Royal.

KNEE INJURIES

- . Left Knee Injury
- . Double Knee Replacement

PCS Clubmaker: Alex Pali
Golfer: Christopher Swope Age: 27

GOLFER'S RANGE OF ABILITIES:

Young man, very strong upper body, beginning golfer.

GOLFER'S RANGE OF LIMITATIONS:

Left knee injury, cannot rotate or put weight on left side.

FITTING OBJECTIVE:

Increase ball trajectory of tee shots, add distance to drive/iron shots.

RECOMMENDED FITTING PROCEDURE:

Measure club head speed, use a couple of swings with the True Temper Determinator and several sample clubs. Make loft and lie adjustments during the test, evaluate shorter club lengths.

FITTING SPECIFICATIONS DETERMINED:

Standard length clubs, 3° upright with A flex shaft, 1/32" oversize grips. Driver with 13° loft performed best.

RECOMMENDED COMPONENTS:

Head: Projector III - UT Golf 5 iron Shaft: Grafalloy SR Classic
Grip: Lamkin wrap

LIST CLUBS MADE FOR THIS GOLFER:

Driver, Delta head 13° loft, metal wood. . 5 iron, UT Golf Projector III.

SPECIAL CLUBMAKING TECHNIQUES USED:

Remove weight from hosel of 5 iron to reduce total weight of club. Driver shaft flex was trimmed to be between A and L flex.

TOTAL HOURS FITTING AND MAKING CLUBS:

Four hours.

FITTING/EQUIPMENT FEE RECOMMENDED:

Free as a case study, \$50.00 as standard fee for complete set.



PCS Clubmaker: Michael Brown
Golfer: Bill Rousome Age: 66

GOLFER'S RANGE OF ABILITIES:

Full use of upper body, able to walk without assistance, works part time.

GOLFER'S RANGE OF LIMITATIONS:

Due to a double knee replacement, the legs are unable to flex in a side-to-side motion, thus prohibiting the classic coiling/uncoiling motion of the golf swing. Also, little wrist action.

INITIAL OBSERVATION:

Upright open stance, short backswing with little wrist action. Downswing and follow through hurried, resulting in a "swipe" at the ball more than a swing. Ball positioned off left instep. Ball flight was low, short and to the right in a push or push/ slice. Inconsistent contact with swing.

FITTING OBJECTIVE:

To improve accuracy and to add loft and distance to the shots. Accuracy was primary concern, then trajectory.

RECOMMENDED FITTING PROCEDURE:

To observe and determine golfer's overall physical/athletic abilities, assess major strengths and weaknesses of swing mechanics. Observe ball flights, check current equipment, and finally, determine where this golfer's game could be improved and yet be most beneficial and practical.

FITTING SPECIFICATIONS DETERMINED:

1. Standard ladies' grip to encourage wrist action. 2. Club length (woods) to be 1/4" to 1/2" shorter than men's standard. 3. Very light composite shaft, low bend point, good amount of flex, torque range of $5^{\circ}\pm$ to match swing speed and tempo and encourage a higher trajectory and senior lofts to help get the ball up. 4. Swingweight C-8 plus minus.



Paralysis/Stroke

- . Paralysis/Waist Down
- . Uses Crutches
- . Paralysis/Waist Down/Use of One Arm
- . Paralysis/Left Side
- . Paralysis/Right Side

PCS Clubmaker: Floyd Roller
Golfer: Jason Samsa Age: 15

GOLFER'S RANGE OF ABILITIES:

This 15-year-old male has been a paraplegic since April 1991. He participates in bowling, Special Olympics, water sports, basketball, tennis and started skiing in 1993. He attends public school in a wheelchair and is developing above average upper body strength. At the Shriners Hospital, Erie, Pennsylvania, he has been fitted with special leg braces and can take a few steps using a walker. His family is hopeful that in the near future he will be able to use crutches with the special leg braces to walk.

GOLFER'S RANGE OF LIMITATIONS:

At the present time he is unable to use legs and is paralyzed from the waist to feet.

FITTING OBJECTIVE:

To expose this youth to the challenge of golf and to improve his physical and mental outlook. To provide him with a life sport by making him custom fitted golf clubs to best negate his physical disability.

RECOMMENDED FITTING PROCEDURE:

Estimates were used based upon his height, strength and height of wheelchair seat from ground. Dynamic testing was not performed. Adjustment to clubs will be made after initial fundamentals of hitting a golf ball from a wheelchair are mastered.

FITTING SPECIFICATIONS DETERMINED:

Specifications were determined after consultation with Ron Tristano, PGA, Director of Challenge Golf program at Edwin Shaw Hospital, Akron, Ohio. Ron sent me a video tape showing golfers hitting from a wheelchair, an outline on fitting the physically challenged golfer and a sample metal wood with a bent shaft that was made by Ron Shea, Shea's Golf, Cuyahoga Falls, Ohio. These items were extremely helpful when making this set of golf clubs.

Paralysis/Stroke

Paralysis/Waist Down

RECOMMENDED COMPONENTS:

	HEADS	SHAFTS	GRIP
Irons:	Golfsmithsf TM II	Dyna!ite L	AFG-ZT
Woods:	Dynacrafts/149S	Microtaper L	AFG-ZT
Putter:	Magique/Brass	Apollo Putter	Toski Target

LIST CLUBS MADE FOR THIS GOLFER:

Irons: 5 through PW, bend flat 8° to 10°

Woods: 3, 5, 6, 7, bend shaft so that club head sets flat from a seated position, 19" from ground.

Putter: Bend flat 8° to 10°, ball pick-up on putter.

Other: Provided a golf bag with stand, regular and practice golf balls, putting mat with ball return, and a practice hitting mat that can be used with woods and irons.

SPECIAL CLUB MAKING TECHNIQUES:

Since I have Centre Golfs club angle machine, it was easy to change the lie on the Golfsmith TM II iron heads and bending the brass putter head. Bending the hosel on Dynacraft's AccuSteel Model 149S metal wood is limited to 2-4° lie adjustment. This presented a major problem to obtain the lie wanted. The test club sent to me by Ron Tristano solved this dilemma. After some cogitation and experimentation, I found that by inserting and locking the wood shaft in my Golfworks graphite shaft extractor, I was able to heat the shaft with a propane torch and easily bend it the limit of the extraction bolt on the left side of the unit. I immediately immersed the shaft in cold water and cleaned it with "blue-a-way" polish.

TOTAL HOURS FITTING AND MAKING CLUBS:

Fitting: 1.5 to 2 hours (estimated)

Making clubs: 2 to 3 hours

Research: 8 hours (Note: first time making this type of club).

FITTING/EQUIPMENT FEE RECOMMENDED:

It is our practice, at this time, not to charge for materials and service for the physically challenged golfer.

PCS Clubmaker: Alex Pali
Golfer: Greg Jones Age: unknown

GOLFER'S RANGE OF ABILITIES:

Very strong upper body, strong arms, good grip, full hearing, sight and distance judgment, good hand/eye coordination.

GOLFER'S RANGE OF LIMITATIONS:

Able to walk short distance with the aid of crutches, he supports himself with a single crutch and swings the club with his right hand. The crutch is used as a stabilizer during the swing.

FITTING OBJECTIVE:

To build a set of clubs, woods and irons, with minimal total club weight yet high enough swing weight to assure the club head feel throughout the swing. The golfer requested increase in accuracy with long irons and an increase in distance with the shorter irons.

RECOMMENDED FITTING PROCEDURE:

Use of a swing analyzer to measure club head speed and clubface angle at impact, hit balls to define ball trajectory and flight pattern. Determine proper lie angle with lie board. Measure hands for grip size. Interview golfer to identify likes and dislikes with existing equipment.

FITTING SPECIFICATIONS DETERMINED:

This golfer needs the lightest total weight clubs, the shaft has to be graphite with weak R flex but fairly low torque value. The grips are mid-size full cord. The full cord helps to hold on to the club with the single handed swing. The single handed swing promotes a very steep take away, causing the golfer to hit down on the ball which causes the ball trajectory to be high.

- Club head speed 5 iron.....60 mph
- Club head speed driver.....68 mph
- Lie Angle 5 iron.....1° up
- Club length 5 iron.....37.5 inches
- Club length driver.....43 inches

RECOMMENDED COMPONENTS:

Woods: Metal, midsize, perimeter weight to assist with accuracy. Irons: Stainless steel cast, bendable, perimeter weight or cavity back oversize, strong loft.
 Shaft: Graphite light weight, mid-torque range, Senior flex.

LIST CLUBS MADE FOR THIS GOLFER:

Woods: National Golf, Palmer Standard

1 wood: 13° loft

3 wood: 16° loft

5 wood: 22° loft

Irons: Chicago Golf, 988 Diagonal balanced, 341 stainless

Club	Loft	Lie	Length
3	23	60	38
4	26	60.5	37.75
5	30	61	37.5
6	34	61.5	37.25
7	38	62	37
8	42	62.5	36.75
9	46	63	36.5
PW	50	63.5	36.25

SPECIAL CLUBMAKING TECHNIQUES USED:

Assembly of clubs no different than any other customer. All clubs conform to USGA rules. The iron lengths were modified to be 1/4" apart, referencing from the 5 iron. The length modifications, in my opinion, help to increase the accuracy with the longer irons and increase the distance with the shorter irons. To keep a straight line reference with the frequency matching, the shaft selection was made from 25 shafts of the same manufacturer. CL24 FiberX shafts were measured on a frequency analyzer with simulated clubhead weights and club lengths. All measurements were recorded on a matrix form and 8 shafts were selected to make up the irons. The frequency variation from the 3 iron to the PW was 21 cpm, which is an almost flat line frequency matching.

TOTAL HOURS FITTING AND MAKING CLUBS:

3.5 hours irons, 1.5 hours woods.

Note that the shaft selection is not part of the above hours. Since there were 25 shafts involved and 8 different club head weights with 8 different club lengths, the total measurements taken were $25 \times 8 = 200$. Each measurement required 2 minutes, total time expended was 400 minutes, which is 16 minutes per shaft. Therefore, the shaft measurements added ($8 \times 16 = 128$ minutes) roughly 2 hours per 8 irons. Total time expended: 7 hours.

FITTING/EQUIPMENT FEE RECOMMENDED:

Fitting Fee: \$50 (deducted from price of clubs if purchased from me within 3 months of measurements)

Clubs: Woods: \$120 each

Irons: \$65 each



PCS Clubmaker: Jim Goodwillie
Golfer: Tony Lane Age: 43

GOLFER'S RANGE OF ABILITIES:

Tony is a 43-year-old male, 6 feet tall, and weighs 120 pounds. Before he was stricken with a spinal disease that left him a T-6 paraplegic, he was about to turn pro and try to make it on the Tour. Since his disability he has become one of the premiere teaching instructors in his area. He can play from the front of his wheelchair or the side. He prefers the front which allows him to get a better shoulder turn. In this regard, his shoulder turn is about 70-75°.

GOLFER'S RANGE OF LIMITATIONS:

Tony is wheelchair bound and uses only his right arm to swing. He uses his left hand for balance and to anchor himself during the swing. He is strong in the arms and upper body. The clubs are gripped from the end, with no choking up. He was an extremely fine golfer before his disability and understands, in detail, the intricacies of the golf swing. He can make swing adjustments the average wheelchair golfer may not be able to make. He feels he can balance better swinging from the front because of the lack of strength in his abdominal muscles, which he feels would be common to most wheelchair golfers. He is also able to create a bigger arc using one hand rather than two.

FITTING OBJECTIVE:

We want to produce clubs that will allow him to achieve maximum distance. Direction is not a problem (he is straight with a slight draw). Trajectory is average. His hands sweat a lot so he prefers cord grips.

RECOMMENDED FITTING PROCEDURE:

Take the following measurements:

1. Distance, on the ground, from a point directly under the spine to heel of club (driver).
2. Length of arms used to swing club.
3. Height from top of seat to ground.
4. Distance from stomach to butt of club (#5 iron).
5. Range of shoulder turn.
6. Angle of club at top of backswing from parallel.
7. Swingspeed for driver and #5 iron.
8. Lie as determined from lie board.
9. Note average length of drive.
10. Note average length of #5 iron shot.
11. Grip size.
12. Take specs from current set.

FITTING SPECIFICATIONS DETERMINED:

- | | |
|--|---|
| 1. Spine to club | - 47" |
| 2. Top of seat to ground | - 23 1/2" |
| 3. Arm length | - 30" |
| 4. Distance from butt of club to stomach | - 8-9" |
| 5. Shoulder turn | - 60-70° |
| 6. Angle of club at top | - parallel to ground |
| 7. Swingspeed (3 wood) | - 76 mph |
| 8. Swingspeed (5 iron) | - 70 mph |
| 9. Lie (5 iron) | - 3° flat (57°) |
| 10. Length of average drive | - 160 yards |
| 11. Length of average 5 iron | - 110 yards |
| 12. Grip size | - + 1/64 |
| 13. Club length | - Driver: 42"
- 5 iron: 37"
- PW: 32" |

RECOMMENDED COMPONENTS:

Head: Woods - Metal, weak lofts: 3,5,7

Irons - Cavity back, weak loft, 3° flat: 3,5,7,9, PW

Shaft: Graphite, A flex, similar to Fiber-X BM 24.

Grip: Golfer prefers cord, but consider Golf Pride Velvet Lite or Royal Grip Sand Wrap.

LIST CLUBS MADE FOR THIS GOLFER: None to date.

SPECIAL CLUB MAKING TECHNIQUES USED:

Not applicable at this time.

TOTAL HOUSE FITTING AND MAKING CLUBS:

4 hours.

FITTING/EQUIPMENT FEE RECOMMENDED:

None. I normally charge \$40.00 for a full fitting session which includes range work, measuring, use of demo clubs, and specs of existing clubs. The price for woods would average about \$75.00 for graphite and \$40.00 for graphite irons. They would be frequency matched and the lofts and lies individually set.



PCS Clubmaker: Michael Brown
Golfer: Santion Magnano Age: 52

GOLFER'S RANGE OF ABILITIES:

Walks short distances without assistance. Right side of body healthy. Physically active. Works full time, takes physical/industrial therapy at least twice a week.

GOLFER'S RANGE OF LIMITATIONS:

Stroke victim, left side paralysis (arm and leg). Addresses ball right handed, swings with right hand. Limited if any weight shift, left leg cannot support it.

INITIAL OBSERVATION:

Plays ball off right foot. Little or no weight shift to left side. Upright, open stance. Tends to hit low draws and hooks. Hoods club at impact. Golfer felt something shorter and lighter might help (hitting 3 metal wood). Fairly consistent swing. Average swing speed 65 mph.

FITTING OBJECTIVE:

Diminish the hooking, increase accuracy and distance. Trajectory and accuracy were primary concerns.

RECOMMENDED FITTING PROCEDURE:

Standard observation, pick out those areas that would have the greatest impact on his game, keeping in mind the beneficial and practical.

FITTING SPECIFICATIONS DETERMINED:

Oversize grip to diminish wrist action, shorter length (1/4"1/2") for a little more control, very light, flexible, low bend point graphite shaft (::"1 duce overall weight, add weight to club head for feel and control), senior lofted metal woods.

RECOMMENDED COMPONENTS:

Head: Genesis mid-size metalwood (Dynacraft)

Shaft: Aldila low torque, 5°, low flex, regular

Grip: Avon oversize JCHB

LIST CLUBS MADE FOR GOLFER:

#3 metal wood

60° loft wedge (pinseeker head, Aldila low torque 5° regular shaft).

INITIAL RESULTS:

Inconsistent. Golfer had just completed a day's work and physical therapy. He may have been a little tired. However, his immediate reaction to #3 metal wood was positive. Liked the oversized grip and launched some very impressive drives with it.

SPECIAL CLUB MAKING TECHNIQUES:

None

TOTAL HOURS FITTING AND MAKING CLUBS:

2 Hours

FITTING/EQUIPMENT FEE RECOMMENDED:

Single metal wood \$100.00 (graphite)

Single iron \$75.00 (graphite)

Paralysis/Stroke
Side



Paralysis/Left

Paralysis/Stroke

Paralysis/Left Side - *con't*



PCS Clubmaker: Michael Brown
Golfer: Greg Bradford Age: 27

GOLFER'S RANGE OF ABILITIES:

Strong and physically active, good athletic ability.

GOLFER'S RANGE OF LIMITATIONS:

Stroke victim, paralysis right side.

INITIAL OBSERVATION:

Right hand address position, swings with left arm. Good control, consistent swing. Usually makes good contact with the ball, accuracy good. Needs distance and loft. (Wouldn't play him for money!) Long irons and driver are difficult for him.

FITTING OBJECTIVE:

Good direction, just needs a little more trajectory on shots, more control with #3 woods, needs loft wedge for short game. Unable to control swing speed as much as he'd like with short irons around green.

RECOMMENDED FITTING PROCEDURE:

Work with length, loft, grip and flex. He was using a ladies' #3 Big Bertha metal wood and liked the length.

FITTING SPECIFICATIONS DETERMINED:

Shorter length club for added control with the woods (114" to 112"), graphite, low bend point, flexible shaft, torque 50:1::, men's standard grip, a senior lofted club; that is, one with a touch more loft swingweights C-8.

RECOMMENDED COMPONENTS:

Head: Genesis #3 metal wood (Dynacraft)
Shaft: 60° loft wedge – Dynacraft
Aldila low torque, 5°, low flex, regular
Grip: Royal Perf Wrap - men's standard

LIST CLUBS MADE FOR GOLFER:

#3 metal wood
60° loft wedge men's standard

INITIAL RESULTS:

Killed the 3 wood, very happy with loft wedge. Added about 20± yards with 3 wood.

SPECIAL CLUB MAKING TECHNIQUES:

None

TOTAL HOURS FITTING AND MAKING CLUBS:

2 Hours

FITTING/EQUIPMENT FEE RECOMMENDED:

Metal wood \$100.00 (graphite)

Iron \$75.00 (graphite)

60° lob wedge

Mike made this custom wedge for me. I love it. The way it feels, my short game will improve a lot. 30 yards, up and down. In the rough I hit this club, comes out perfect.

5-wood

I like this club. It is a hair shorter and the head of this club is bigger. Imagine, I was stuck in the rough about 170 yards to the flag. I hit the ball with your S-wood and it came out with more loft and more control.

Sincerely, Greg Bradford



Paralysis/Stroke
Side



Paralysis/Right



PHYSICAL ILLNESS

. General Weakness

. Swing Limitations

PCS Clubmaker: Michael Brown
Golfer: Victor Pelatowski Age: 75

GOLFER'S RANGE OF ABILITIES:

No visible handicap, full use of body. Retired construction worker.

GOLFER'S RANGE OF LIMITATIONS:

Golfer suffers from gout, chronic shingles (legs), "calcification" of lungs. Taking numerous medications, tires quickly.

INITIAL OBSERVATION:

Smooth swing, slow, easy tempo. Average swing speed 68 mph, reverse weight shift on downswing and follow through. Using 9.5 degree metal # 1 wood, Dynamic "S" shaft, Lamkin Sure Tour Cord grip. Mixed bag of clubs. Good direction, little loft, distance.

FITTING OBJECTIVE:

Increase loft (trajectory) and distance. Softer grip for better feel. Trajectory and distance primary concern. Direction good.

RECOMMENDED FITTING PROCEDURE:

Standard. Observe and determine golfer's overall physical/athletic ability, assess major strengths and weaknesses of swing mechanics. Observe ball flight, check current equipment. Determine where golfer's game could be improved and yet be most beneficial and practical.

FITTING SPECIFICATIONS DETERMINED:

1. Oversized soft grip.
2. Very light composite shaft, low flex (bend) point, flexible higher torque range.
3. Senior lofted clubs.
4. Upper C swingweight (C-8+-).
5. Standard length.

Physical Illness
Weakness

General

RECOMMENDED COMPONENTS:

Head: Genesis mid-size metalwood (Dynacraft)
Shaft: Aldila low torque, 5.0 low flex, light
Grip: Avon oversize JCHB

LIST CLUBS MADE FOR GOLFER:

#1 12 degree Genesis midsize metal wood

INITIAL RESULTS:

Although a notable improvement in trajectory and distance, it was not as much as anticipated. Golfer tried a #3 wood and a #5 wood of similar specs with much better results. Built a #2 wood because that was what he normally used.

SPECIAL CLUB MAKING TECHNIQUES:

None

TOTAL HOURS FITTING AND MAKING CLUBS:

Not listed.

FITTING/EQUIPMENT FEE RECOMMENDED:

None

Dear Mike Brown,

I would like to thank you for all the help you have given me to encourage me to try many clubs which finally narrowed to a few which suited my limited ability. I especially liked the #3 club which had a nice grip and weight which made it easy to swing.

Playing at the Gaylord Golf Clinics has been a lot of fun and it has revived my interest in actually playing again and watching golf on TV with added interest.

I think this renewed interest has given me a stability and a direction which makes life a more calming experience. Thanks again!

Sincerely, Victor Pelatowski

Physical Illness

General Weakness - *can't*



PCS Clubmaker: Alex Pali
 Golfer: Fred Griffith Age: 51

GOLFERS RANGE OF ABILITIES:

Left-handed golfer. Golfing since 1970, had a 15.2 USGA handicap. He was operated on for lung cancer, 1/2 of lung was removed.

GOLFERS RANGE OF LIMITATIONS:

During the operation in 1995, several ribs and some muscle tissues were removed. He cannot complete a follow through and his swing stops before the club reaches waist level.

FITTING OBJECTIVE:

Increase distance with all clubs without sacrificing accuracy.

RECOMMENDED FITTING PROCEDURE:

Measured existing clubs for length, swing weight, frequency, loft and lie.
 Measured clubhead speed using Beltroncis Swing Mate.

FITTING SPECIFICATIONS DETERMINED:

Clubhead speed: Driver - 68 mph
 5 Iron - 62 mph

Club lie angle and club length:

IRON	FREQUENCY		IRON	FREQUENCY	
3	38 1/4	250	7	36 1/2	280
4	37 3/4	258	8	36 1/4	284
5	37 1/4	264	9	36	288
6	36 3/4	272	SW	35 1/2	292

Driver 33 1/4
 3 Wood 32 1/4
 5 Wood 31 1/4

Physical Illness

Swing Limitations

- *con't*

RECOMMENDED COMPONENTS:

Head: Projector II	UT Golf
Shaft: Brunswick	FMC Rifle 4.5
Grip: Royal Grip	Sand Wrap

LIST CLUBS MADE FOR THIS GOLFER:

Woods 1, 3, 5

Irons 3 - 9, SW

SPECIAL CLUBMAKING TECHNIQUES USED:

The club lengths were reduced from his original clubs by 3/4" (driver to 33 1/4 and 5 Iron to 37 1/4") Other clubs retain 1/2" progression. The lie angle was increased from standard to +4° up.

TOTAL HOURS FITTING AND MAKING CLUBS:

12 hours

FITTING EQUIPMENT FEE RECOMMENDED:

Fitting fee was part of the sale of clubs, woods and irons, \$515.00

NOTE:

Fred has played at Atlantic City Country Club, par 70, 128 rated, and shot a 92 with his new clubs. His putter is now a long 42" putter. He had 39 putts. The clubs are okay, but something needs to be done with his putter so he can break 90 the next time he plays.

POLIO

. Weakness in Arm

PCS Clubmaker: Russell Swanson
Golfer: Ed Age: 67

GOLFER'S RANGE OF ABILITIES:

Golfer has full use of legs, ability to stand and walk without assistance, full use of hearing, sight and distance judgment, good right hand/eye coordination.

GOLFER'S RANGE OF LIMITATIONS:

Golfer is polio victim, minimal strength in right hand, no use of left arm, limited use of right arm. Right arm cannot make a normal rotation through impact to facilitate squaring of club face to target. This is due to right arm muscle loss which also results in slow club speed.

FITTING OBJECTIVE:

To build a club with which the golfer can get the face square at impact and one which the golfer can swing faster.

RECOMMENDED FITTING PROCEDURE:

Customer must hit balls so that the disability can be observed. Use swing analyzer to determine clubhead speed and clubface angle at impact. Determine proper lie with dynamic lie fitting board. Measure hands for grip size.

FITTING SPECIFICATIONS DETERMINED:

This customer needs the lightest possible ultralite graphite shaft and the softest flex to accommodate slow club head speed. A 6° closed club head with woods is recommended. Good hand/eye coordination means customer can benefit from longer shafts. Start at 2" over. Arthritic grips seem to work best with the weak muscle in right hand.

RECOMMENDED COMPONENTS:

Head: Dynaflite Model 4027 3° hook, bend another 3° hook

Shaft: Aldila HM30 Superlite men's

Grip: Tackimac Arthritic

LIST CLUBS MADE FOR THIS GOLFER:

3 and 5 woods

3-PW Tour Limited Edition irons

SPECIAL CLUBMAKING TECHNIQUES:

Actual clubbuilding is no different than any other customer. Clubs must conform to USGA Rules. I do feel, however, that the fitter must have exceptional swing analysis skills to properly determine what it is that this golfer is or is not able to do with his unique swing.

TOTAL HOURS FITTING AND MAKING CLUBS:

5-6 hours.

FITTING/EQUIPMENT FEE RECOMMENDED:

Same as any other.

SKELETAL **DYSPLASIA**

. Dwarfism

PCS Clubmaker: Jim Goodwillie
Golfer: Darrell Bielema Age: 43

GOLFER'S RANGE OF ABILITIES:

Darrell is a 44-year-old male, 4' 6" tall, and weighs 165 pounds. He is a dwarf, but an accomplished golfer who practices and plays regularly. He has played many courses in both this country and overseas. He shoots in the high 80s to low 90s on a fairly difficult course, where he is a member. He exercises to help keep supple. His hands have short fingers but broad palms. He takes a nice light grip. He is very accurate and has a slight draw on the ball. He does not choke up on the clubs.

GOLFER'S RANGE OF LIMITATIONS:

Darrell's shoulders are slightly dislocated from birth, but he achieves a good shoulder turn. He has no hip joints as such. His swing is quite flat. He cannot straighten either arm. The left can only be extended to a 45° position. Distance is his big problem. The feel of the grip (not too hard) is important to him.

FITTING OBJECTIVE:

To produce clubs that will allow him to achieve maximum distance. Direction is not a problem. Trajectory is a little low and we need to raise this. He tees the ball about 1" from the ground. A soft feeling grip is preferred.

RECOMMENDED FITTING PROCEDURE:

Take the following measurements:

1. Length of arms.
2. Distance from knuckles of left hand to ground.
3. Distance from butt of club to ground.
4. Distance from stomach to butt of club (#5 iron).
5. Range of shoulder turn.
6. Angle of club at top of backswing from parallel.
7. Swingspeed for driver and #5 iron.
8. Lie as determined from lie board.
9. Measure width of stance.
- to. Measure distance from hip to ground.
11. Note average length of drive.
12. Note average length of #5 iron shot.
13. Grip size.
14. Take specs from current set.

Skeletal Dysplasia

Dwarfism

FITTING SPECIFICATIONS DETERMINED:

1. Arm length	- 21 1/2"
2. Knuckle to ground	- 27"
3. Butt to ground	- 29"
4. Distance from butt of club to stomach	- 1"
5. Shoulder turn	- 80-85°
6. Angle of club at top	- 60°
7. Swingspeed (driver)	- 74 MPH
8. Swingspeed (5 iron)	- 70 MPH
9. Lie (5 iron)	- 1° flat (59°)
10. Width of stance	- 10 1/2"
11. Hip to ground	- 29 1/2"
12. Length of average drive	- 175 yards
13. Length of average 5 iron	- 120 yards
14. Grip size	- Men's Standard
15. Club lengths	Driver: 42 1/2" 5 iron: 37" PW: 35"

RECOMMENDED COMPONENTS:

Head: Woods - metal, standard size heads, weak lofts (12-13°)

Irons - Cavity back, weak loft, 1° flat: 3-SW

Shaft: Graphite, A flex, similar to Fiber-X CL 24.

Grip: Chamois or Golf Pride Velvet Lite

Length: 1/2" men's standard

LIST CLUBS MADE FOR THIS GOLFER:

Woods: 1-3-5 Accusteel 1.5° hook, extra driver - Sundance by Golfsmith 12°

Shafts: Aldila low torque L flex

Grips: Black chamois - M 60

Irons: Heads: Tour Series by Tour Edge Golf Shafts: Aldila low torque L flex

Grips: Black chamois M 60

SPECIAL CLUBMAKING TECHNIQUES USED:

Experimented with club length and grips. Initially made clubs at ladies standard which was too short. Initial grips were Royal Perf which were too hard on the hands. Also made grips at +1/65 ladies' which were too small and hurt his hands.

TOTAL HOURS FITTING AND MAKING CLUBS:

8 hours.

FITTING/EQUIPMENT FEE RECOMMENDED:

A set of 3 woods and 8 irons, graphite shafts, built in 1991 cost \$507, not including sales tax. I did not charge for the fitting.

A full fitting today would cost \$40.00 and for the same clubs I would charge about \$625.

Skeletal Dysplasia

Dwarfism



Case Study Reporting Format

If you would like to submit a case study for next year's publication, please use the following format to report your information. Thank you for your participation

1. Golfer's Range of Abilities
2. Golfer's Range of Limitations
3. Fitting Objective
4. Recommended Fitting Procedure
5. Specifications Determined From Fitting
6. Recommended Components
7. List Clubs Made for This Golfer
8. Special Clubmaking Techniques Used on This Project
9. Total Hours Devoted to Fitting and Making Clubs
10. Recommended Fee for Fitting Equipment Made for This Golfer
11. Your Name
12. Golfer's Name
13. Golfer's Age

References

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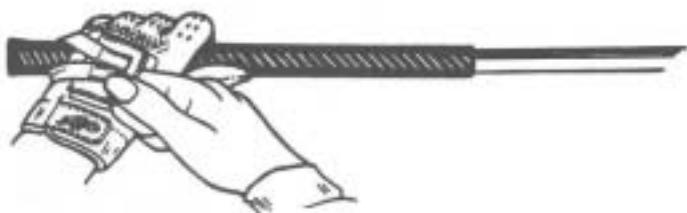
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Acorn to Oak: The PCS Story

The Professional CLUBMAKERS' Society (PCS) originated out of one man's dedication of excellence to his craft as a custom golf clubmaker and his desire to promote and raise awareness of the craft as a profession. Because of rapid growth in component clubmaking, he saw an urgent need for standardization, networking, and leadership in order to preserve the fine art of clubmaking.

In the summer of 1989, Elmore Just planted the seed by inviting three leading clubmakers to Louisville. Together, the four men, Elmore Just, Keith Hannan, Wayne Hardin, and John Wheatley laid the foundation of the PCS which would address the concerns and needs of custom clubmakers. In the fall of 1989, sixty-five clubmakers from across the nation met at Persimmon Ridge Golf Club in Louisville, Kentucky, for the inaugural meeting of the PCS. Art Henry became the first Executive Director and an eight-member advisory board was established.

To successfully launch the PCS, Dynacraft Golf Products together with Louisville Golf pledged their early support and guidance by providing countless hours of assistance. Incorporated in 1990, the PCS sprouted and at the same time became an international organization when the European Guild of Clubmakers merged with it. Publication of the first PCS Journal soon followed and the Second Annual Meeting of the PCS was attended by over 100 members from North America and Europe.

The certification process became an integral part of the PCS in 1991 with the establishment of the "Class A" Clubmaker Examination. This two-part exam, consisting of a rigorous practical skills test and a written assessment, affords exceptionally skilled clubmakers recognition of excellence as a clubmaker with accreditation not previously available.

The PCS became a co-sponsor of the "Clubmaker of the Year Award" in conjunction with Golf Shop Operations at the 1991 PGA Merchandise Show in Orlando, Florida, with John Green, a PGA Master Professional, named as the first recipient. The Third Annual Meeting brought record attendance and featured four educational seminars.

In the spring of 1992, Elmore Just was appointed Executive Director and the PCS International Headquarters was established at Persimmon Ridge Golf Club in Louisville, Kentucky, and two full-time staff members were added. The Fourth Annual Meeting was expanded to include the first PCS Component Trade Show, featuring 28 exhibitors and three educational seminars.

During 1993 and 1994, the PCS saw considerable growth and recognition as a formidable player in the golf industry. The "Clubmaker of the Year Award" moved from the PGA Merchandise Show to the PCS Annual Meeting and Component Trade Show, offering the winner of this coveted award the opportunity to be honored among peers. The Second Annual Component Trade

Show doubled in size and featured six workshops. A major achievement in 1993 was offering the affordable PCS Group Liability Insurance Program to PCS members.

In 1994, PCS membership increased fifty percent, the Corporate Sponsor Program doubled in size, and the PCS Journal expanded to six issues per year. Before the entire golfing industry at a ceremony held at the Annual PGA Merchandise Show in Orlando, Florida, the PCS honored its first Clubmakers Hall of Fame inductee, legendary clubmaker Toney Penna. The 1994 Annual Meeting & Component Trade Show received over 600 attendees featuring 68 exhibitors. Diane Ogle, who served as Trade Show Manager and Director of Communications since June 1993, was appointed to succeed Elmore Just as Executive Director.

The year 1995 was pivotal for the PCS. Membership and "Class A" certification grew fifty percent, and the PCS Component Trade Show attracted record-breaking attendance and a sell-out of 92 exhibitors. The "Just Award" was created to honor those who have made outstanding contributions to the PCS, with Richard Bogdon and Forest Sands being named the first recipients. The Task Force on Fitting the Physically Challenged Golfer was formed to educate clubmakers on fitting golfers with varying degrees of physical mobility and limitations. Overall, 1995 resulted in a stronger, more unified PCS dedicated to the independent clubmaker, with its focus on serving member needs and increasing member services.

Technological advances, membership services and marketing of the PCS and its members have dominated 1996. The 1996 PCS International Symposium and Expo (formerly the Component Trade Show) has expanded and promises to exceed all others. The first effort by the PCS to gain recognition on a major tour was achieved through sponsorship of Moira Dunn throughout the LPGA 1996 season. Moira's new bag prominently displays the PCS logo and she carries clubs made by PCS "Class A" Clubmaker Dick Bogdan of Schenectady, NY.

All active PCS members (excluding Associate, Honorary and Retired) now receive exposure on the Internet via the PCS Home Page (<http://www.pro-clubmakers.org>). Our new PCS affiliate Program offers easier and more affordable Internet marketing for PCS-member businesses. Also, the PCS and its members can now communicate by e-mail.

Future goals include the Clubmakers' Cottage (an all-inclusive headquarters, education and certification facility and Clubmakers' Hall of Fame), co-op advertising programs, and additional discount purchasing programs.

Today, after just seven years, the PCS has grown into a strong oak. The PCS is proud of its 1600 members and 420 certified "Class A" clubmakers. PCS Publications such as the PCS Journal, PCS Membership Directory, PCS International Symposium & Expo Directory, The Forgotten Foursome: Fitting the Physically Challenged Golfer, and The PCS Fitting Form serve as invaluable resources for professionals in our industry.

With the rapidly-growing market for custom clubmaking, the PCS stands firm to "foster, promote and elevate the profession of custom fitting, building and

repair of golf clubs throughout the world." The PCS is an independent, non-profit organization which exists solely to promote awareness of our member services and to raise the educational and expertise of our membership. No matter what your level of expertise, the PCS structure recognizes the value of all club makers by allowing you to choose the level of your involvement. We invite you to come grow with us!