

Sports after Total Joint Replacement

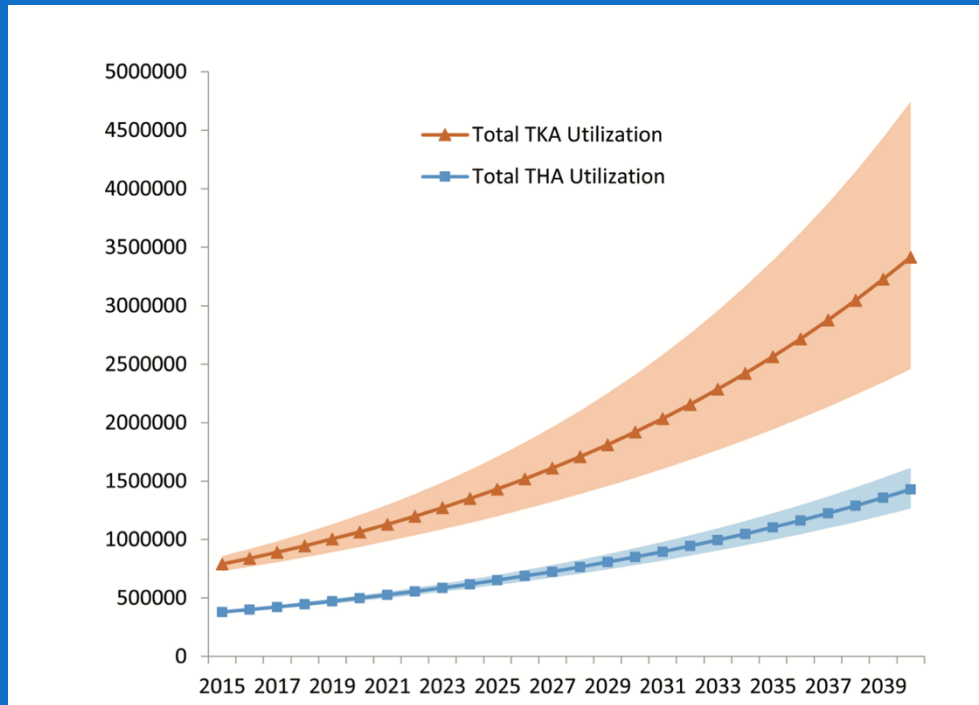


Primary Care Conference
11/5-11/9/25
Napa, CA

Greg Maletis
Kaiser Baldwin Park

I have no disclosures

Projected Increases in US Joint Replacements



2025 1.8 million

2040 3.5 million

Joint Replacements

- Pain relief
- Improve lower extremity function
- Improved health-related quality of life
- Increased activity levels



Reasons for Knee Replacement

- 80% say pain relief is the main reason for undergoing TKA
- 20% said returning to athletic activities was their primary reason



Baby Boomers

- Less tolerant of discomfort and disability
- Do not want to accept limitations of arthritic joints
- Demanding total joint replacement at younger ages
- Higher expectations of returning to athletic activities

Knee Replacement TKA



Hip Replacement

THA



Hip Resurfacing



Durability is limited

- Polyethylene wear
- Leads to osteolysis and implant loosening



Poly wear is a function of use not time

Complications

Symptomatic VTE 1.2%

Infection 1.6%

Periprosthetic Fractures can occur



The implant acts as a stress riser

Implant Survival

TKA

90% survival at 20 yrs

THA

85% survival at 20 yrs

Patients <60 are 30% more active
than patients > 60 years of age

Higher rates of mechanical loosening
found in more active patients

Lifetime risk of revision

> 70 yrs 5% risk of revision, < 55 yrs 35% risk of revision

Exercise after Joint Replacement

Benefits

- Maintain overall health
- Lower BMI
- Increased bone density
 - May improve prosthesis fixation and decrease loosening

Risks

- Higher joint forces lead to implant wear and loosening
- Jogging increases hip joint loads to 500% of body weight.

Do patients return to Sports

- 2085 patients
 - In the 3 yrs prior to surgery 35% participated in sports
 - Swimming, walking, and golf
 - 61% returned to their sports 1-3 years after surgery
 - 26% were unable to return due to pain
- Best predictor is pre-op activity level



Limited literature to determine “safe” levels of exercise

- Risk / Benefit
- General health
- Type of activity
- Prior experience
- Intensity
 - Physical fitness
 - Recreation
 - Professional



Patients have higher expectations of returning to higher level sports



Activity Recommendations after Total Hip

Allowed	Allowed with experience	Not recommended
Golf	Skiing	Racquetball/Squash
Swimming	Weightlifting	Singles Tennis
Doubles tennis	Ice skating	Jogging/Running
Stairmaster, elliptical, walking, treadmill	Rollerblading	Contact sports (football, hockey, soccer)
Hiking	Pilates	Handball
Cycling		Basketball
Bowling		Waterskiing
Dancing		High impact aerobics
Rowing		Snowboarding
Weight machines		Martial Arts
Pickleball		Baseball/Softball

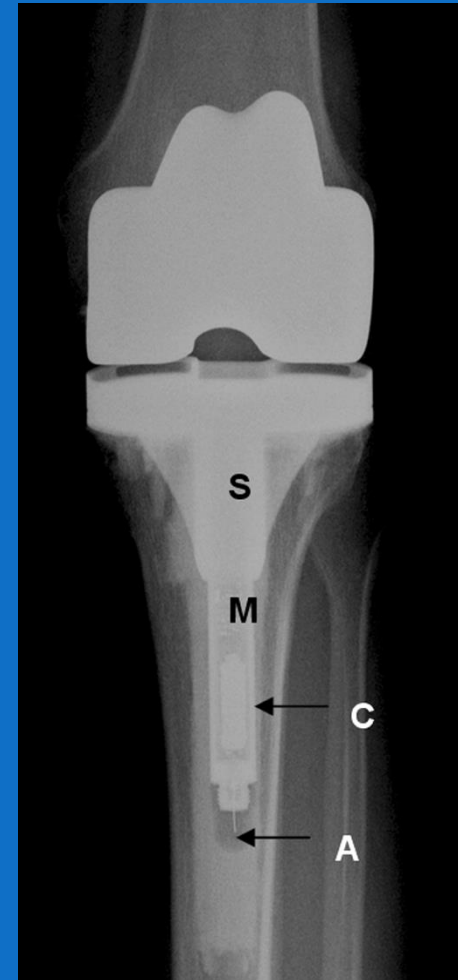
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Swimming	Doubles Tennis	Singles Tennis
Low impact aerobics	Ice skating	Jogging/Running
Stairmaster, elliptical, walking, treadmill	Cycling	Contact sports (football, hockey, soccer)
Bowling	Hiking	Handball
Dancing	Rowing	Basketball
Pickleball	Speed walking	Waterskiing
		High impact aerobics
		Snowboarding
		Martial Arts
		Baseball/Softball

TKA Joint Load

Instrumented TKA

- Walking 2.5-2.8 X BW
- Jogging 4.2
- Golf
 - Lead leg 4.4
 - Trail leg 3.0
- Tennis 4.2
- Elliptical 2.3
- Stairmaster 2.4-3.3
- Leg Press 2.8



Return to Sport N= 2366

	THA	TKA	Both
5 yrs prior	86.8%	81.5%	81.6%
1 yr. prior	69.2%	61.5%	61.3%
4 yrs post	73.1%	72%	60.8%

Revision and sports at 5 years N=3010

	No Sports	Low Impact	Int/High Impact
THA	2.9%	1.9%	1.6%
TKA	3.0%	1.6%	0 %



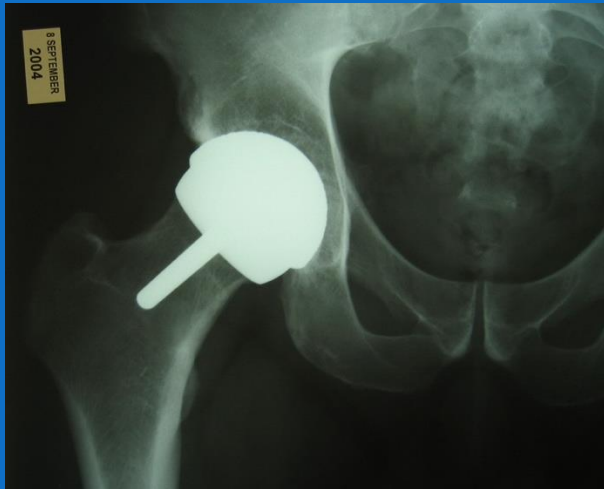
Activity after THA

- 10 year survival (N=101)
- <55 years of age
- 88% survival
- Low impact sports does not appear to increase wear or decrease survival



Activity after Hip resurfacing

- 144 hips at 5 years
- Mean age 52 years
- 90% participating in some type of sports
- Return to sports is better than standard THA
- Concerns about metal on metal wear debris producing ionically charged particles
- 94% survival at 10 years



Activity after TKA

- Results not quite as good as THA
- 2 articulations
- Shear stress
- 114 knees < 55 yrs
- 8yr follow-up
- 87% survival
 - 60% waked 2 miles/day
 - 25% cycling, tennis, skiing



THA compared to TKA

- 809 patients at 5 years
- More THA patients returned to athletic activities
 - Higher frequency and more hours than TKA
 - THA more active in cycling, hiking, swimming, skiing
- TKA had more pain



High Impact Sports after THA

- 70 high impact sport patients compared to 140 low impact sport participants
- 10 year follow-up
- More wear and higher number of revisions in the high impact group



TKA Results after High Impact sports

- 31 patients with 33 knees
- 3.5 hrs per week
- Sports
 - Jogging, Singles tennis, racquetball, squash, downhill skiing, basketball
- At 4 years f/u 32 of 33 knees had successful clinical and radiographic outcomes



Tennis after THA

- 58 patients with 75 hip replacements
- Returned to nearly the same tennis rating after surgery
- 4% revised at 8 years



Tennis after TKA

- Survey sent to USTA players in Virginia, Delaware, and Maryland
- 33 tennis players with 46 TKA's
- Only 7% had been told by surgeon they could play
- 4% had revision by 7 years



Running after THA or TKA

- 4462 joint replacements
- 548 (12%) were runners preop
- 65 (12%) were runners post op
- 67% were satisfied
- Revisions (5yrs)
 - Runners who returned 6.2%
 - Runners who didn't return 4.8%



Running after Hip Resurfacing

- 202 patients with 215 hip resurfacing surgeries
- 92% of runners returned to running
- Time devoted to running 3.1 hrs per week
- Follow-up was only 2 ½ years



Mt. Everest?



Don Healy 62 years old



Ellen Miller 54 years old Bilateral THA
Everest, Nuptse, Lhotse

Surfing after Hip Replacement

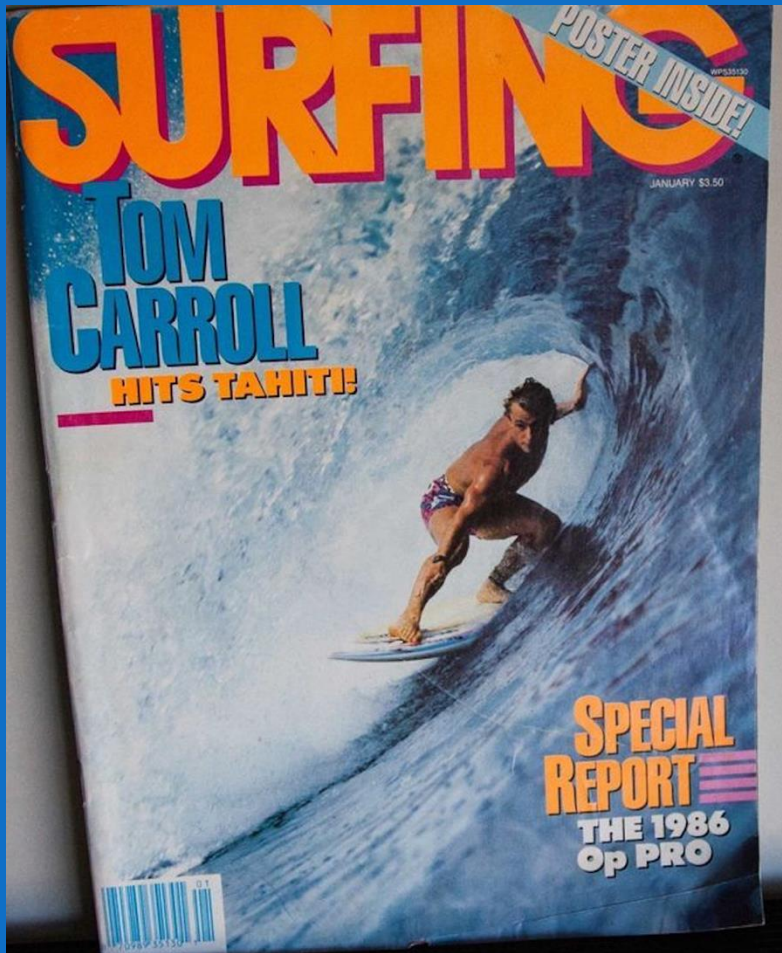


Laird Hamilton



Jeff Clark

Surfing after Knee Replacement



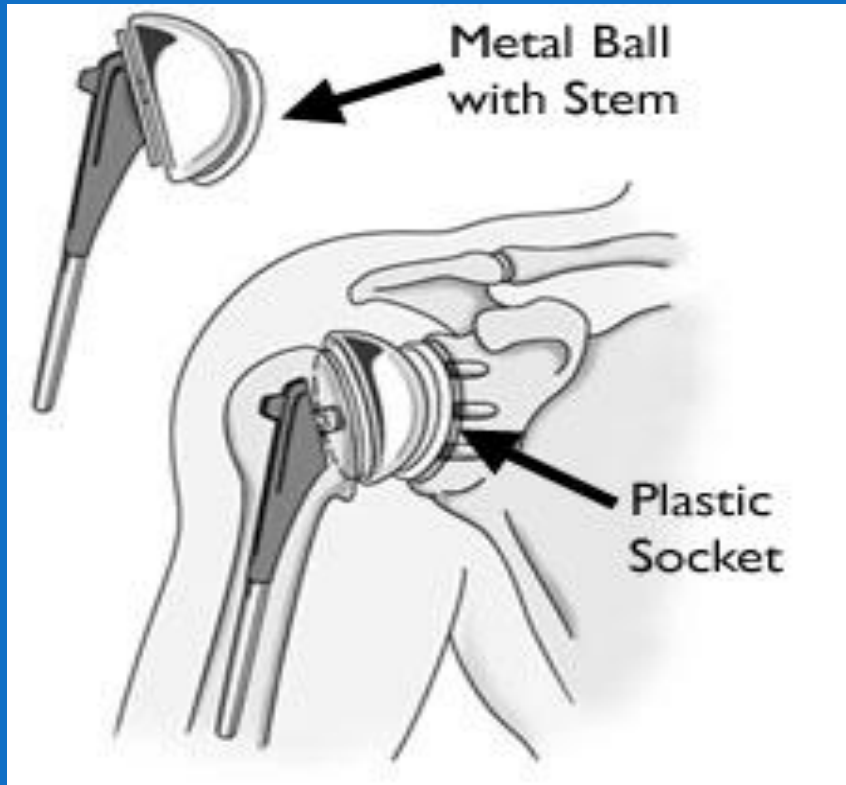
Tom Carroll

Skiing after Partial Knee Replacement



World Cup at 39 yrs of age

Total Shoulder Arthroplasty TSA



Sports after TSA

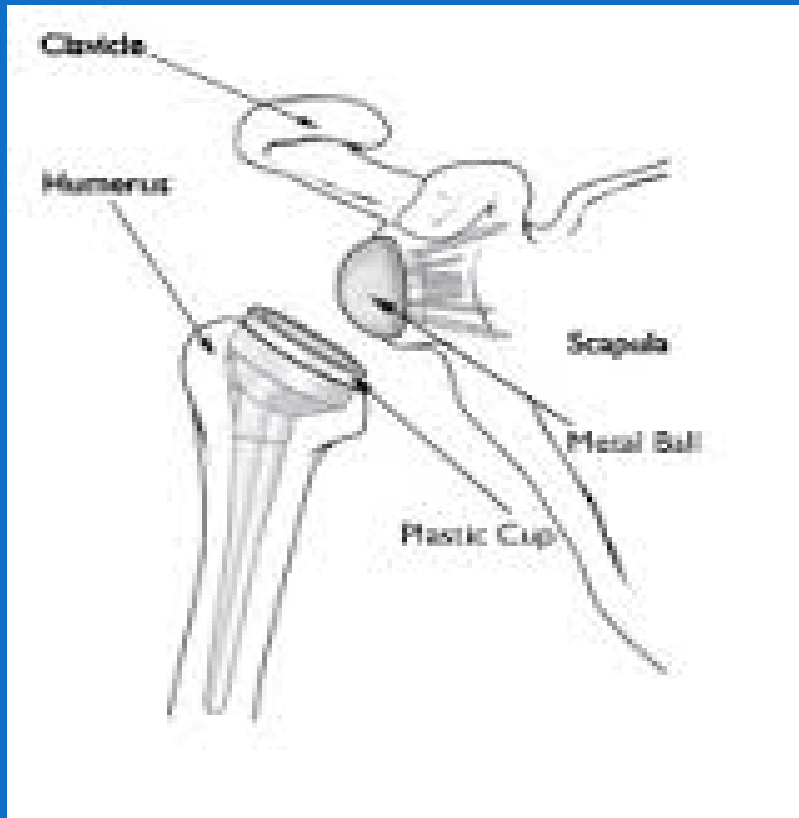
- Sys Rev 994 patients
 - 93% return to sports
 - 72% equivalent or improved
- 89% able to resume sports at a mean 3 yrs after TSA
 - Swimming 20%
 - Golf 16%
 - Cycling 16%
 - Fitness training 16%
- 37% still suffered restrictions due to shoulder



Lui KSSTA 2018

Schumann Am J Sports Med 2010

Reverse Total Shoulder Arthroplasty RSA



Sports after RSA

- Sys Rev (3092 pts)
 - 85% RT to sports
 - 70% Same or higher level
- 78 patients at 5 yrs
- 23% high-intensity activities
 - Hunting, golf, skiing
- 49% moderate-intensity activities
 - Swimming, bowling, raking leaves
- 28% low-intensity activities
 - Walking, stationary bike



Tennis after Shoulder Replacement

- 43 pts
 - median age 71
 - 27 TSA , 16 RSA
- 90% returned to tennis
- 90% with same or improved performance
- 98% with same or improved enjoyment



Weightlifting after Shoulder Replacement

42 shoulders in high demand weightlifters

55% returned to heavy weightlifting against advice

3.6 years f/u, No revisions

Patient satisfaction 91.3%

RTS satisfaction 82.6%



Take away message

- Low to moderate activity should be encouraged
 - May increase overall total joint survival
- Caution regarding high impact sports
 - Short term results are encouraging
 - Limited long term results
 - 8-10 years may be the critical time to see wear

Thank You