Supplementary Table 2. Sports Performance and Health Related Detailed Reported Outcomes of Included Studies

Study	Outcome Measure(s)	Detailed Results
SURGICAL TREATMENT ONLY (ATHLETES VS MATCHED NON-ATHLETES)		
Mochida et al. (2001)(30)	Scoring system of JOA for LBP = 9 points for subjective and 6 points for clinical signs (> 12/15 = success); ADL scoring system of JOA (4-point scale)	Athletes who returned earlier than 3 m were more likely to have LBP than athletes who returned after more than 3 m (P = .024) **Final surgical failure rate:** Athlete-MIN (35%) v athlete –EXT(60%): P = ns Non-athlete-MIN v non-athlete-EXT: P = .049 Non-athlete-MIN v athlete-EXT: P = .014 **Improvement in low back pain by ADL score:** Non-athlete-MIN v athlete-MIN: P = .013 Non-athlete-MIN v athlete-EXT: P = .012 **Return to preoperative sport:** Athlete-MIN v athlete-EXT: P = .03
SURGICAL TREATMENT ONLY (ATHLETES vs MANUAL LABORERS)		
Matsunaga et al. (1993)(31)	Rate of RTS, time until RTS	See table 3; detailed results NR
SURGICAL TREATMENT ONLY (ATHLETES ONLY)		
Sakou et al. (1993)(32)	Rate of RTS, Macnab's grading of disc protrusion based on MRI	Of the 9 athletes that returned to sport, 5 recovered to pre-operative level; other four showed lower level of recovery
Savage et al. (2010)(35)	Power rating Power rating divided by the number of games played. Ratio of number of games started v number of games played	 **QB**: PR per game before surgery = 11.8 PR per game after surgery = 11.9 P = .95

		RB, TE, WR: PR per game before surgery = 4.1 PR per game after surgery = 3.7 P = .67 53% (n = 9 of 17) of players treated surgically with discectomy had higher PRs after surgery No change in percent games started before vs. after treatment (p = .99) No significant difference comparing demographic findings between athletes who RTS in the NFL and those who did not (P = .52)
Watkins et al (2003)(33)	Return to competitive play, neurologic deficits by level	No significant difference in RTS based on leg v back pain 88.2% (15/17) athletes with neurologic deficits regained full function Neurologic deficits by level Pre-surgical: L3 = 1 L4 = 3 L5 = 4 S1 = 8 L5 and S1 = 1 Post-surgical: L3 = 0 L4 = 0 L5 = 0 S1 = 2 L5 and S1 = 0

Watkins et al. (2012)(34)	Participation in at least one minute of a professional regular season game	This study did not assess performance outcomes, only measuring return to play rate No significant difference in RTS rate between sports (P = .48) No significant difference in return time between sports (P = .44) No significant difference in percentage of athletes who returned to sport after surgery (P = .62) or time to return average (P = .62) between disc levels operated
Yoshimoto et al (2013)(29)	JOA score, SF-36	26.3%(5/19) suffered a slight decline in performance due to continued low back pain or leg pain JOA: improvement (80.4%)(p< .05) SF-36: improvement in all subscales (p< .05)
SURGICAL VS CONSERVATIVE TREATMENT (ATHLETES ONLY)		
Earhart et al. (2012)(24)	Pitchers: Total wins ERA Saves Innings pitched Strikeouts WHIP Hitters: Runs Home runs RBI Stolen bases	**Surgical group (pitchers):** **3 y pre** Total wins = 9.2 ERA = 3.52 Saves = 7.4 Innings pitched = 136.3 Strikeouts = 110.9 WHIP = 1.22 1 y post Total wins = 7.7 (P = .44) ERA = 4.16 (P = .05) Saves = 4.4 (P = .39)

	Batting average	Innings pitched = 114.0 (P = .37) Strikeouts = 86.4 (P = .32) WHIP = 1.35 (P = .04) 3 y post Total wins = 7.9 (P = .49) ERA = 4.13 (P = .04) Saves = 2.8 (P = .22) Innings pitched = 118.0 (P = .43) Strikeouts = 85.8 (P = .34) WHIP = 1.35 (P = .03) **Conservative group (pitchers):** **3 y pre** Total wins = 10.0 ERA = 4.16 Saves = 0.5 Innings pitched = 158.1 Strikeouts = 108.1 WHIP = 1.43 1 y post Total wins = 5.8 (P = .13) ERA = 4.25 (P = .82) Saves = 0 (P = .30) Innings pitched = 126.4 (P = .54) Strikeouts = 80.8 (P = .42) WHIP = 1.48 (P = .69) 3 y post Total wins = 6.3 (P = .55) ERA = 6.16 (P = .50) Saves = 0.3 (P = .77)

		Innings pitched = 125.7 (P = .77) Strikeouts = 88.0 (P = .78) WHIP = 1.50 (P = .69) **Surgical group (All hitters):** 3 y pre Runs = 68.2 HR = 14.3 RBI = 58.7 SB = 6.6 BA = 0.269 1 y post Runs = 35.0 (P = .008) HR = 16.5 (P = .80) RBI = 35.4 (P = .009) SB = 1.9 (P = .066) BA = 0.268 (P = .97) 3 y post Runs = 59.2 (P = .60) HR = 12.4 (P = .67) RBI = 49.0 (P = .40) SB = 6.8 (P = .95) BA = 0.274 (P = .56) **Conservative group (All hitters):** 3 y pre Runs = 56.4 HR = 16.6 RBI = 56.6 SB = 4.6 BA = 0.280

		1 y post Runs = 41.3 (P = .25) HR = 17.1 (P = .91) RBI = 48.6 (P = .56) SB = 1.9 (P = .22) BA = 0.283 (P = .84) 3 y post Runs = 70.4 (P = .48) HR = 20.2 (P = .54) RBI = 70.6 (P = .41) SB = 3.6 (P = .68) BA = 0.283 (P = .85)
Hsu et al. (2010)(22)	Standardized player performance score based on game stats and dependent on position Ratio of number of games started versus games played	No difference in groups with regards to performance score and games started (P = .77)
Hsu et al. (2011)(23)	RTS rate; career games and years played after surgery (normalized for sport –type)	RTS rate= this rate is based on games per season. MLB = 1 ($p < .05$) NHL = .9 NBA = .85 NFL = .7 ($p < .05$) MLB players RTS at a higher rate than other sports ($p < 0.05$). NFL players RTS at a lower rate than other sports ($p < 0.05$) No significant differences were demonstrated in either cohort for the NHL and NBA athletes

Schroeder et al. (2013)(25)	Games played per year, total number of points per game, and a performance score modified for hockey that was based on previously published scoring systems for other sports	No difference between groups for RTS rates, decrease in games per season, or decrease in performance score after treatment RTS % NR **Surgical:** Decreased from 55 games/season to 36 games/season (P<0.0001) **Conservative:** Decreased from 55 games/season to 44 games/season (P=0.01) **Surgical group:** Significant decrease in games played per season (P < .01), points per game (P < .0001), and performance score (P < .02) before and after surgery. **Conservative group:** Significant decrease in games played per season (P < .0001) and performance score (P < .004) before and after surgery
Weistroffer (2011)(26)	RTS on active NFL roster for a regular season NFL game	**Surgical group:** 63.5% became NFL starters. 3 players who were initially starters lost that status postoperatively. **Conservative group:** 28.6% successfully RTS which was less (P < .05) than the surgical group 7 (13.5%) linemen (6 offense, 1 defense) in surgical

		cohort sustained recurrent LDH Multivariate logistic regression analysis demonstrated no association between groups related to age, height, weight, BMI, position played, NFL experience, Pro Bowl appearances
SURGICAL TREATMENT VS CONTROL GROUP (MATCHED ASYMPTOMATIC ATHLETES WITHOUT INTERVENTION)		
Anakwenze et al. (2010)(28)	Preindex to postindex season performance (index season = season of surgery) Performance measures: Number of games played Number of minutes/game Points per 40 minutes Rebounds per 40 minutes Assists per 40 minutes Steals per 40 minutes Blocks per 40 minutes Shooting percentage Number of games played	**Surgical group (postindex-preindex)** Number of games played = -20.1 (P = .093) Number of minutes/game = - 4.44 (P = .414 Points per 40 minutes = -1.80 (P = .598) Rebounds per 40 minutes = -0.25 (P = < .049) Assists per 40 minutes = -0.12 (P = .172) Steals per 40 minutes = -0.08 (P = .501) Blocks per 40 minutes = 0.18 (P = < .008) Shooting percentage = -0.065 (P = .831) **Control group (postindex-preindex)** Number of games played = -8.81 (P = .093) Number of minutes/game = - 2.24 (P = .414 Points per 40 minutes = -2.46 (P = .598) Rebounds per 40 minutes = -1.42 (P = < 0.049) Assists per 40 minutes = -0.28 (P = .172) Steals per 40 minutes = -0.17 (P = .501) Blocks per 40 minutes = 0.33 (P = < .008) Shooting percentage = -0.058 (P = .831) Surgical group played an average of 20.1 fewer games (pre to post surgically) compared to control group playing an average of 8.8 fewer games after surgery (P = .093).
Wang et al. (1999)(14)	SF-36	SF-36 significant results: Physical function

		Return to sport = 98 Did not return = 84 P = .009 Bodily pain Return to sport = 81 Did not return = 43 P = .003 Physical summary Return to sport = 50 Did not return = 39 P = .009 Scores not significantly different for surgical patients (n=11) and uninjured age-matched control athletes (n=37)

Japanese Orthopedic Association (JOA), LBP = low back pain, ADL = activities of daily living, MIN = minimal amount of disc removed (1.0 gram on average), EXT = extensive amount of disc removed (3.4 grams on average), m = months, RTS = return to sport. PN = percutaneous nucleoplasty, f/u = follow-up, wks = weeks, m= months, y= years, NR= not reported, ERA= earned run average, IP= innings pitched, K= strikeouts, WHIP= Walks plus hits divided by innings pitched, RBI = runs batted in, PR = power rating, QB = quarterback, RB = running backs, TE = tight ends, WR = wide receivers, MRI = Magnetic Resonance Imaging, SF-36 = short form 36, v = versus, NR= not reported, ERA= earned run average, RBI = runs batted in, NFL = National Football League, NHL = National Hockey League, NBA = National Basketball Association, MLB = Major League Baseball, RTS = return to sport, BMI = body mass index, LDH = lumbar disc herniation