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Summary

Objectives: Changes in society and demography have led to an increase in leisure sports and elderly.
Methods: 101 patients after Total Hip Replacement were divided into three groups (active, moderately active, non-active). Functional outcomes were assessed and radiological evaluation was performed.
Results: The Harris Hip and Merle d'Aubigné Score showed no statistical differences between the three clusters. BMI was inversely proportional to the level of activity. Osteolytic changes were most present in 33% of active patients, 30% of moderately active patients and 53% of non-active patients ($p > 0.05$). Linear polyethylene wear was highest within the non-active group.
Conclusion: Moderate activities have no definite negative influence on total hip arthroplasty. Moderate sports may lead to better osteointegration with less osteolytic changes.

Keywords
Hip joint – Arthroplasty – Total joint replacement – Sports

M. Majewski et al.

Sport und Hüftprothese – Kein Widerspruch – Analyse mit einem minimum Follow-up von 10 Jahren

Zusammenfassung

Die Zahl der sportlich aktiven Menschen ist in den letzten Jahren stark angestiegen.
Wir untersuchten 101 Patienten nach Hüft-Totalprothese. Die Patienten wurden in Abhängigkeit von ihrer sportlichen Aktivität in drei Gruppen unterteilt. Die klinische und radiologische Evaluation erfolgte mittels Fragebögen und standardisierten Röntgenuntersuchung.
Der Harris-Hip- und Merle d'Aubigné Score zeigte keine statistischen Unterschiede. Der BMI war umgekehrt proportional zum Grad der Aktivität. Lysezeichen fanden sich bei 33% der

FREIE THEMEN

Sports and Total Hip Arthroplasty – A Contradiction in Terms? Analysis with a minimum Follow-up of Ten Years

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Introduction

The number of people performing leisure sports has increased in recent years due to changes in society and demography. This developmental trend may be attributed to an increased amount of leisure time and a greater extent of body awareness in our society [4,17,18,23].
The western population performs sports activities up to an old age on a regular basis. Thus, questions concerning sports after total joint replacement are more frequently addressed to general practitioners [1,8,19]. In particular, the question whether sports should be performed after total hip arthroplasty has not yet conclusively been answered by the current literature and thus remains subject of controversy [1,8,19,40].
Mont and Kilgus [20,27] stated that sport may have a negative effect on the longevity of prosthetic components. They expect increased prosthetic wear due to the additional strain caused by sports and therefore a higher rate of aseptic loosening [20,27]. In contrast, several authors consider positive effects on bone growth and osteointegration of prosthetic components stimulated by regular sports activities [14,33,35,39].
In order to answer the frequently asked question whether performing sports after total hip replacement has a positive or negative impact on the long-term survival of prosthetic components, we postoperatively followed our total hip patients that are practicing sports activities on different levels.

Materials and Methods

Since 1985, more than 2000 patients received an uncemented Zweymüller® rectangular stem. To build up the study population all patients with ceramic heads combined with uncemented Zweymüller® acetabular threaded cups or hemispheric pressfit cups with polyethylene liner were included in the study. All patients received a transgluteal approach. To assure that sports activities were performed at a higher level, all patients

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aktiven, 30% mäßig aktiven und 53% nicht-aktiven Patienten ($p > 0,05$). Der lineare Polyethylen-Abrieb war in der nicht-aktiven Patientengruppe am höchsten.
Moderate sportliche Aktivität zeigte keinen negativen Einfluss auf das funktionelle Resultat nach Hüftprothese, kann aber zu einer besseren Osteointegration des Implantates im Femurschaft beitragen.

Schlüsselwörter
Hüftgelenk – Endoprothetik – Gelenkersatz – Sport

older than 69 years at the time of surgery where excluded from this group. To insure similar conditions before surgery, we only recruited patients who received their hip replacement due to primary osteoarthritis.
Furthermore, we considered only those patients who reveived their hip replacement ten years prior to the current follow-up to cover prosthetic long-term survival. Moreover, all patients with concomitant medical conditions (heart, lung etc.) prohibiting their active participation in sports, patients with bilateral osteoarthritis, osteoarthritis of the knee or ankle and all patients who underwent previous or planned surgery of the lower extremities were also excluded from this study. Out of those 101 patients 29 of them had already passed away and where therefore excluded. 8 patients could not be found (lost of follow up of −7.9%)
Therefore, a group of 64 patients (42 men, 22 women) who fulfilled all criteria including a minimum clinical and radiological follow-up of ten years after uncemented Total Hip Replacement could be examined. The average follow-up was 148 (120-191) months postoperative.
Four (two active, two non-active) patients had undergone revision surgery, because of shaft loosening, and were not further evaluated. The remaining 60 patients showed full osteointegration of all prosthetic components.
Based on an assessment by Peter 2000 [31], sports activity was qualified by the strength of muscular effort and therefore prosthetic load applied. All sports activities were qualified into five main components, and if present, each parameter counts as one point. (Force, Endurance, Speed, Flexibility, Coordination) (Table 1).

The activity of sports were then quantified as following: regular or seasonal, practice less than once every two weeks = 1 point, regular or seasonal practice every two weeks = 2 points, regular practice once to twice weekly = 3 points, regular practice three to five times per week = 4 points, and regular practice 6 or more times per week and/or performing elite sports = 5 points.
The performance index was then calculated as the product of the exercise quality (5 points) and quantity (5 points). A maximum performance index of 25 could be achieved [31].
Beside this sports activity assessment further quantification of the functional outcome after total hip arthroplasty, the questionnaires from Harris and Merle D'Aubigné were used [16,26], and the BMI was accessed.
The three groups were comparable with respect to gender, distribution of age and follow-up examination after total joint replacement. The ratio male/female was 12/7, 13/7, and 14/7 respectively. The distribution of age was similar among the three groups: the mean age was 61 ± 5y with the non-active group, 59.5 ± 4y with the moderately active group and 60 ± 4y with the active group. No significant differences were found comparing the follow-up between the three clusters: 12.9 ± 1.5y for the non-active group, 12 ± 1.4y for the moderately active group and 12.7 ± 1.5y for the active group.
To evaluated the radiological outcome we used a ap view of the pelvic with the symphysis-centred anterior/posterior with the lower leg suspended over the table (guaranteeing almost identical rotation of the femur at every follow-up x-ray) and an axial view of the respective hip according to Lauenstein [24]. Changes in the orientation of