

# Reentry into the Workforce after Anterior Lumbar Interbody Fusion with Percutaneous Posterior Pedicle Fixation: A Historical Review from Two German Academic Centers

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## Introduction

Anterior Lumbar Interbody Fusion combined with Percutaneous Posterior Pedicle Fixation is a well-established surgical technique for addressing degenerative lumbar spine conditions, including disc herniation, spondylolisthesis, and chronic lower back pain unresponsive to conservative treatments. The primary goal of ALIF with PPF is to restore spinal stability, relieve nerve compression, and alleviate pain, improving patient function and quality of life. One critical aspect of post-operative success, particularly for working-age individuals, is the ability to reenter the workforce after recovery. Returning to work after spine surgery is influenced by multiple factors, including the extent of the surgical intervention, the patient's baseline health, occupational demands, and socio-economic considerations. In Germany, with its comprehensive healthcare and workers' compensation systems, evaluating the outcomes of ALIF with PPF surgeries in terms of RTW is of particular interest. This article presents a historical review of reentry into the workforce after ALIF combined with PPF, based on data from two leading German academic centers. We will explore the surgical approach, factors affecting return to work, historical trends, and the impact of this surgical technique on the working population in Germany. Our review provides valuable insights for spine surgeons, healthcare professionals, and policymakers concerned with patient outcomes, rehabilitation, and social reintegration. ALIF is a technique that involves accessing the lumbar spine through an anterior (front) approach, usually via an incision in the lower abdomen. This approach allows the surgeon to remove the diseased or damaged intervertebral disc and insert a bone graft or cage into the disc space. The bone graft promotes fusion between the adjacent vertebrae, restoring stability to the spinal column and maintaining proper disc height to relieve nerve compression. One of the primary advantages of ALIF is that it spares the posterior (back) muscles and soft tissues, which are often affected in traditional posterior approaches, reducing post-operative pain and accelerating recovery. The anterior approach also allows for the placement of larger interbody devices, providing better support and improving the chances of successful fusion [1-3].

## Description

The University Medical Center Hamburg-Eppendorf is a major academic hospital known for its cutting-edge spine surgery programs. Over the past 20 years, UKE has performed hundreds of ALIF procedures with PPF, primarily on patients suffering from degenerative lumbar spine conditions. A retrospective

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study conducted at UKE found that approximately 70% of patients undergoing ALIF with PPF were able to return to work within six months of surgery. Factors positively associated with RTW included successful fusion rates (achieved in 85% of patients), younger age (below 50), and jobs requiring low physical exertion. However, patients in physically demanding occupations had a significantly lower RTW rate, with only 50% returning within the six-month timeframe. The UKE study also highlighted the importance of post-operative rehabilitation, with patients who completed a structured physical therapy program demonstrating faster and more successful RTW outcomes. The study recommended early initiation of rehabilitation to improve functional recovery and reintegration into the workforce. The University Hospital Heidelberg is another leading center for spine surgery in Germany, with a strong focus on minimally invasive techniques such as ALIF and PPF. A similar historical review of patients undergoing ALIF with PPF at Heidelberg revealed comparable RTW rates, with 65-70% of patients returning to work within six months. Interestingly, the Heidelberg data also identified psychosocial factors as key determinants of RTW success. Patients with higher levels of job satisfaction and strong social support systems were more likely to return to work quickly and resume full-time employment. In contrast, patients experiencing workplace stress or dissatisfaction were more likely to delay RTW or transition to part-time work. The study also noted that patients with sedentary jobs or flexible work arrangements, such as telecommuting, were able to return to work much earlier than those in physically demanding roles. Patients with office-based jobs often resumed work as early as 8-12 weeks post-operatively, with gradual increases in working hours as they regained strength and mobility [4,5].

## Conclusion

The ability to return to work after ALIF with PPF has significant socio-economic implications for both the individual and society. From an individual perspective, RTW provides financial stability, social engagement, and a sense of normalcy, contributing to overall well-being. From a societal perspective, successful RTW reduces the economic burden on healthcare systems, disability benefits programs, and workers' compensation funds. In Germany, where the aging population and high prevalence of chronic back pain are major public health concerns, promoting RTW after spine surgery is critical for maintaining a productive workforce. Spine surgeons, rehabilitation specialists, and policymakers must work together to optimize surgical outcomes, streamline rehabilitation processes, and create supportive work environments that facilitate reintegration. Reentry into the workforce after ALIF with percutaneous posterior pedicle fixation is a complex but achievable goal for many patients, particularly those with less physically demanding occupations and successful fusion outcomes. Historical data from two German academic centers suggest that approximately 65-70% of patients are able to return to work within six months of surgery, with a combination of clinical, occupational, and psychosocial factors influencing success.

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## Conflict of Interest

None.

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