Proficiency Based Progression Training and the AANA Copernicus Initiative

Proficiency Based Progression (PBP) Training is an approach to teaching skills which dictates that the trainee must acquire and demonstrate basic skill sets before progressing on to more advanced techniques. The PBP methodology is evidence-based and serves as both a training and assessment strategy. At the core of the curriculum are unambiguously defined metrics that include steps (tasks to complete) and errors (deviations from optimal performance). Those metrics are derived from a careful task deconstruction of the procedure (or set of skills to be mastered) by experienced practitioners. The product represents a comprehensive performance characterization of the procedure to be learned. The enactment of errors has repeatedly been shown to be the greatest discriminator between novice and experienced surgeons – the avoidance of errors is emphasized in the PBP curriculum. Once the metrics are validated, they serve as the guide to the safe and effective performance of the specific surgery or intervention. Finally, proficiency benchmarks are established based on the objectively assessed performance of experienced and proficient practitioners.

The AANA Copernicus Initiative was a 4-year series of research investigations into the merit and impact of the PBP training model. Rigorous testing and validation of the curriculum was undertaken to substantiate each component of the methodology. Performance assessments are based on the binary scoring of the individual metrics (i.e. the event either "was" or "was not" observed to occur by the evaluator) and have proven to be extremely reliable. The result is that a trainee's performance is objectively evaluated and quality assured. As part of the Copernicus investigation, a prospective, randomized, and blinded trial demonstrated that orthopedic residents randomized to the PBP curriculum completed significantly more tasks and enacted 55% fewer errors. The PBP group were also 5 – 7 times more likely to achieve the proficiency benchmark than the group who were trained with conventional methods. Due to the comprehensive research validation of the methodology, it is appropriate even for high-stakes assessments. The striking results of the Copernicus research represent the need for a paradigm shift in surgical skills training from the apprenticeship model of the past to one of quality assured PBP training for the future.

The PBP training and assessment methodology is applicable to any scenario in which high quality skills training is essential. The Copernicus strategy has special merit when applied to new and innovative techniques. Superior training would ensure that sophisticated and technically demanding tools, instruments, and implants were employed safely and effectively. The same task deconstruction, metric characterization, validation, proficiency benchmark establishment, and assessment methods used for the Copernicus investigation would be utilized. The trainee benefits from the goal clarity performance metrics provide, the optimized and focused performance feedback, deliberate practice opportunities, and the ability to correct deficiencies in a safe and supportive environment. Further, assessment strategies could be employed to establish appropriate barriers to entry thresholds in which the scope of practice and competency issues are a potential concern.

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