ABSTRACT INTRODUCTION:
Deep flexion after total knee arthroplasty (TKA) is required in the substantial population. Though posterior condylar offset of the knee (PCO), defined as the maximum thickness of posterior condyle, has become into the limelight as a factor of deep flexion since Bellemans’s report1, there was no its precise data in normal knee. The maintenance of PCO prevents posterior impingement and is essential to achieve deep flexion, but there was no its precise data in normal knee. The purpose of this study was to obtain anthropometric data about PCO to design the optimal femoral component for the Asian-pacific population.

METHODS:
132 normal knees were measured on plane radiographies. On frontal image, we measured medial-lateral (ML) length of femoral condyle (Fig.1-a). On precise lateral image, Anterior-posterior (AP) lengths of the femoral condyle and femoral shaft diameter were measured (Fig.1-b). PCO was defined as the sum of the radius of circular profile of the posterior femoral condyle and the distance of the circular center from the posterior plane of femoral shaft.

RESULTS SECTION:
The averages of ML, AP length, shaft diameter and radius of the posterior femoral condyle were 66.3±5.2 (mean±SD mm), 55.8±3.9, 28.0±2.8, 17.7±1.9. AP/ML ratio had a negative correlation with ML length indicating that small knees were longer in the AP direction (Fig.2). Although all the parameters (ML, shaft diameter and radius of the posterior femoral condyle) showed well-correlated changes (Fig.3a, 3b), PCO was essentially constant among the knees (Fig.4).

DISCUSSION:
The results of this study have indicated that a small knee had a larger AP-to-ML ratio2 and that PCO remains unchanged even in big knees because posterior femoral condyle with larger radius approaches to the femoral shaft. This finding is interesting in that the shapes of distal femur do not show a proportional change and there is significant difference among the knees. These data could provide the basis for designing the optimal femoral component for most of the Asian-Pacific population in which deep flexion is necessary in various dairy activities.

REFERENCES:

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