PRP Sub-Committee Summary

The PRP Sub-Committee (Ron Bowman, MD, Brad Lorber, MD, Susan Strom, DC) has met and reviewed numerous articles as prepared by Juerg Kunz.

The excel spreadsheet was pre-populated by Juerg. The last 3 columns (Quality, Benefit, PRP prep/mfg) were put together by the sub-committee.

The consensus opinion is that PRP remains unproven. There are some areas that are well studied (i.e. RTC tears, Lateral epicondylitis, knee osteoarthritis, etc.) that have conflicting results.

The majority of studies regarding RTC tears show no clinical benefit for PRP. However, the majority of the studies for knee OA shows clinical benefit. Other areas of study did not show a significant majority benefit on way or the other.

Confounding features of many studies include no true control group and non-blinding. We rated the level of evidence as adopted by the North American Spine Society (and adopted by the MAC at a post meeting). The difference between level 1 and 2 RCTs can be blurred. We arbitrarily designated an RCT level 2 if it was not double blinded. Certainly, there were some level 2 studies that appeared to be of much higher quality than some level 1 studies, but were graded lower because of the lack of double blinding. Some well done studies could not be blinded easily.

Many studies in both level 1 and level 2 had low N, but enough to qualify for statistical significance of the results. Another confounder can be study sponsorship or funding by a PRP manufacturer. While most studies were reported to be free of conflict, quite a few were "supported" with most of these studies by Arthrex. Interestingly, the vast majority of the studies "supported" by Arthrex found that the PRP was non-beneficial.

A key point made by most studies is that the PRP prep type may be of paramount importance, but it is not convincingly clear yet which type of prep may be best, if any.

We have provided a grading system for PRP preps as designated by Mishra et.al.

Their grading system is as follows:

Type (A/B)	WBC	Activation
1	+	-
2	+	+
3	-	-
4	-	+

A= Platelet conc > 5x

B= Platelet conc < 5x

In our prep/mfg section, we listed the prep as designated by the author. If the author did not clearly indicate that the prep was leukocyte poor/rich, activated/unactivated, or what the platelet concentration was, we then left the prep as what was concretely identified (i.e. 1 or 2, A or B if we knew the prep was leukocyte rich, but were unclear on activation status or platelet concentration).

Most of the studies that provided details about platelet concentration or WBC level were based on what the mfg claimed about their kit. A few studies actually did serologic tests to confirm platelet concentration and WBC status.

Certainly inferences can be made to more accurately classify the prep. For instance, double centrifuged preps were more likely to have a platelet concentration greater than 5x, though this was not a guarantee. Also certain manufacturers kits are defined to have certain characteristics. Arthrex ACP is considered to be leukocyte pool and generally < 5 x platelet concentration. Biomet GPS, MyCells, Prosys are all considered leukocyte rich.

When the buffy coat is included in the prep, this is usually considered leukocyte rich.

Some studies would specifically state that the prep was unactivated. When studies made no mention of activation we did not assume the prep to be unactivated. Some preps were done by the institution and not a manufacturer. These may not be standardized.

Theoretical issues with the prep include:

1. Platelet concentration – total # of platelets does not equal concentration. It is unclear if there is a threshold where too much growth factor is problematic.

2. Activation – unclear if certain types of activating agents are better than others (examples of activating agents include Calcium Chloride, Thrombin, Collagen, Photo, Mechanical). See Cavallo et.al. Biomed Research International, volume 2016. Activation may be useful in some sites (i.e. open spaces where a quicker release of growth factors is necessary as opposed to interarticular spaces).

3. WBC concentration – Can the pro-inflammatory component help or hurt the tissue healing and regeneration.

4. Centrifuge issues – single vs double spin vs time vs spin rate can all affect the components of the PRP prep (platelet concentration, separation of components, activation by mechanical means).

5. Timing of the prep – Too early vs too late for growth factors to be effective.

6. Use of anticoagulants in the prep – questions whether this will affect the PRP product. Anticoagulants such as Sodium Citrate, Calcium citrate, and EDTA are used if the PRP is not utilized shortly after the prep is made.