

The Internet Chess Club and GM Davorin Kuljasevic present

Improve Your Chess Calculation



This is a document which will guide you through the course, with a brief introduction to each video. Read the intro, watch the video and solve the quizzes, to get the maximum benefit from your purchase!

Introduction to the course

The goal is to help club players improve their calculation by offering a structured way of calculating variations that reduces the number of elementary mistakes, such as missing opponent's threat or your own strong move at the start of calculation. Calculation guidance, practical calculation advice, solving exercises, and then some more exercises – because calculation is a skill that can only be improved with consistent practice.

GM Davorin Kuljasevic

GM Davorin Kuljasevic guides you through the fundamental concepts that will allow your calculation skills to grow, to make you a better chess player.

Davorin has divided the course into chapters. For every chapter, you'll have to read the theory and solve quizzes, but of course, first of all, watch the videos!

Course's videos:

1. [Introduction](#)
2. Prophylactic thinking
3. Check, take, attack 1
4. Check, take, attack 2
5. Candidate moves 1
6. Candidate moves 2
7. Opponent's resources 1
8. Opponent's resources 2
9. Visualization: Moving parts
10. Visualization: High traffic
11. Visualization: Bare trunk
12. Simple positions
13. Overcoming resistance

All of this is explained by our GM in the [Intro Video](#).

Video 1: Prophylactic thinking



The topic of this chapter is **prophylactic thinking**, which is just a sophisticated term for recognizing the opponent's intentions. It is the first step in a well-structured calculation process.

The idea is to understand the opponent's intentions before we even start considering our candidate moves. Thus, when the opponent makes his move, rather than asking yourself "What should I play now?", a better question is: "**What would he play if it was his move?**".

By spending some time answering this question, the position becomes clearer to us and we reduce chances of missing a simple threat or strong hidden idea from our opponent, while also increasing chances to find the right candidate move.

It often happens that we play a move that seems right to us without properly considering the opponent's 'input', so we miss an important resource for him and regret our hasty decision in hindsight. By using prophylactic thinking on every move, chances for such oversights reduce significantly.

When we try to answer the "What would he play if it was his move?" question, we try to anticipate the opponent's tactical and positional resources alike. Sometimes these will be obvious moves, other times less obvious 2-3 move combinations or maneuvers.

Generally, it is good to prevent or limit the opponent's intentions, but there are also cases in which these threats are not dangerous and can be allowed if we have a good counter-measure. In any event, **awareness of the opponent's intentions is the key**. How you will react to it is another matter and it will be discussed in chapters on candidate moves and 'check, take, attack' method.

In some cases, your opponent can pose multiple threats with a single move. If this happens, it is useful to look at the position more carefully in order to understand which threat is of the highest priority. There are also cases when the opponent's threat is well-hidden. In other words, he makes a move that seems innocent on the surface, but in reality, contains a less obvious idea.



The skill of prophylactic thinking can be practiced in virtually any puzzle that you are trying to solve. Besides the 'Prophylactic thinking' practice section, we will also keep coming to this concept as we solve further examples in the course. Whether the main topic is searching for candidate moves, looking for an opponent's resources or improving visualization, it will be useful to use prophylactic thinking as the first step in the calculation process.

Video 2: Check, Take, Attack – Part 1



This is a very important calculation method. The idea is to start our search for candidate moves with the most forcing moves first. The reason why it is essential to scan the position for forcing moves (checks, captures and attacks) is that the game is usually decided with such moves and you don't want to miss an opportunity to make such a move if it exists.

The order of forcing moves is very important: checks should always be considered first, then captures, and only then attacks/threats. It may turn out that there is no good check in a position, but checks should still have precedence in our preliminary scan of candidate moves over captures, attacks, and other normal moves because a check is the most powerful move in chess.

Of course, that does not mean that checks will be stronger than captures and that captures will be stronger than attacks in every single position. For instance, sometimes a quiet positional move is stronger than any check, capture, or attack. **This method does not determine the strength of candidate moves, just their natural order of consideration.**

In tactical positions, using the check, take, attack technique is of highest priority because there is a pretty good chance that one of these forcing types of moves will also be the best move in the position. It is good to keep track of available forcing moves even if they do not work in a certain position, because they could work on the next move, or several moves later.

In some positions, one can achieve his goals (win, draw by force, or get a big advantage) with 'brute force', meaning that he can use a sequence of completely forced moves (checks, captures and/or attacks) to obtain the desired position. Most popular tactical puzzles have this form.

Video 3: Check, Take, Attack – Part 2

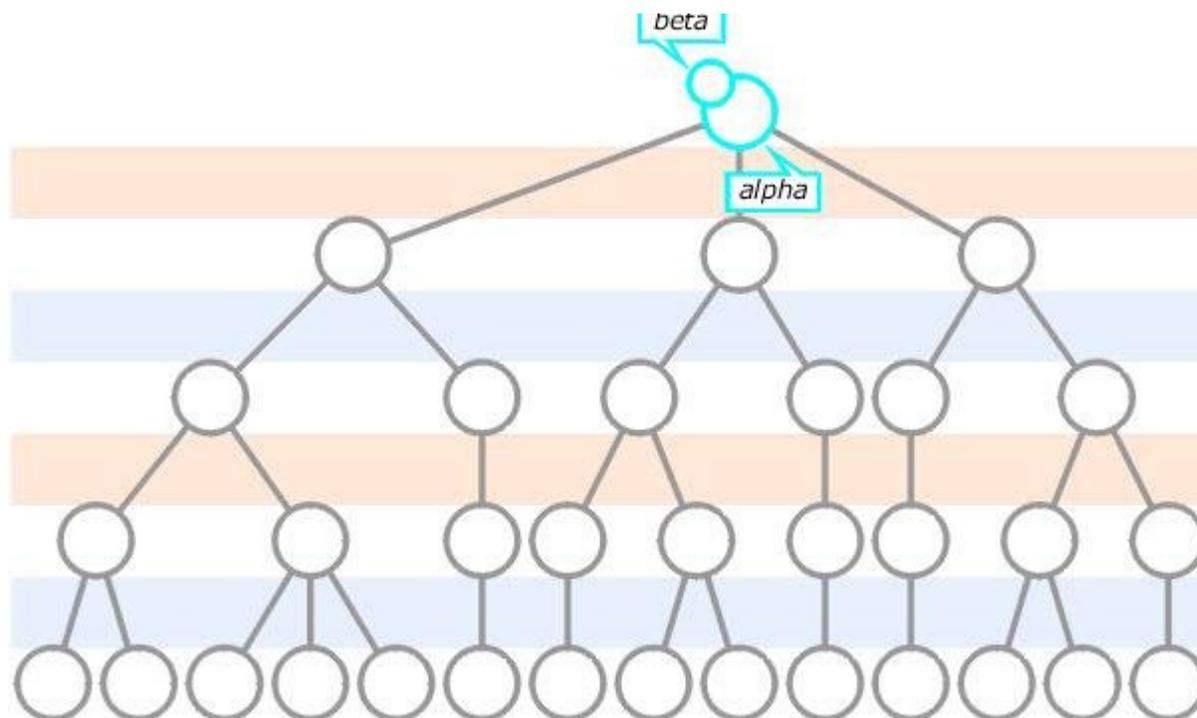
There are also many positions in chess where it does not seem like anything forcing exists, but one should develop the habit to scan for forcing moves even in such positions, because one never knows when a tactical resource can arise; perhaps a barely noticeable tactical mistake by the opponent opens a window of opportunity for you to exploit it. **You don't want to miss a sudden tactical opportunity in a quiet position because if you do, you may never get another chance.** This is why it is very useful to consider checks, captures, and attacks, at least briefly, in most positions in a chess game.

Sometimes, the difficulty of playing a sequence of forcing moves is when they involve material sacrifices. However, one should not hesitate to go for it if one has calculated a forced variation. There is a pretty good chance that a sequence in which you are imposing your idea on your opponent with checks, captures, and attacks will give you initiative and allow you to obtain your goals.

In certain positions, we usually act on 'conditioned reflexes', which means that we react to our opponent's threat or perceived threat with a semi-automatic response; for example – when your queen is under attack, a conditioned reflex is to move it away. While conditioned reflexes are generally useful as they facilitate our decision making, sometimes they can be misleading because another, more forcing move may override the conditioned response, like retreating the attacked piece. Thus, even in positions where we feel like we should respond quickly to opponent's idea or threat, it is good to stop for a moment and consider checks, captures, and attacks as one of them might prove to be a stronger move.

Finally, it is equally important to use 'check, take, attack' method for yourself and your opponent. This way, you develop objectivity in your calculation process, and you reduce the chance of missing an important resource for your opponent (like an intermediate check or counter-attack).

Video 4: Candidate Moves – Part 1



When it comes to looking for candidate moves (both for yourself and your opponent) the first thing is to check for forcing moves (checks, captures, and attacks – as discussed in the previous chapter). Sometimes a forcing move is indeed the best move in the position. However, there are also many positions where forcing moves either don't exist or are not effective. In such cases, **we look for non-forcing moves that could still improve our position or address the opponent's important idea or threat.**

There are calculation methods that can improve the effectiveness of your search for such non-forcing moves, as well as determining whether this move is a good candidate for the best move. In this video, we cover four such methods: using logic, improving variations, comparing candidate moves, and eliminating candidate moves.

Using logic refers to cases when one can determine the best move in the position using simple common sense to solve an important problem in the position.

Improving variations is a method of finding a candidate move that you may not have considered initially, but which improves on an important variation that you have already calculated.

Comparison means that we determine the best move in the position by comparing advantages and disadvantages of several equal-looking candidate moves.

Elimination is a method that is closely related to comparison – it means that we determine the best move by eliminating its alternatives.

In this course, we focus mostly on positions which have a single best move in the position, the so-called critical moments. However, many positions in a chess game don't have the single best move, but several good possibilities. In such cases, you should determine which move to play based on your personal preferences and do not need to waste time trying to figure out whether there is the best move in the position or not.



Video 5: Candidate Moves – Part 2

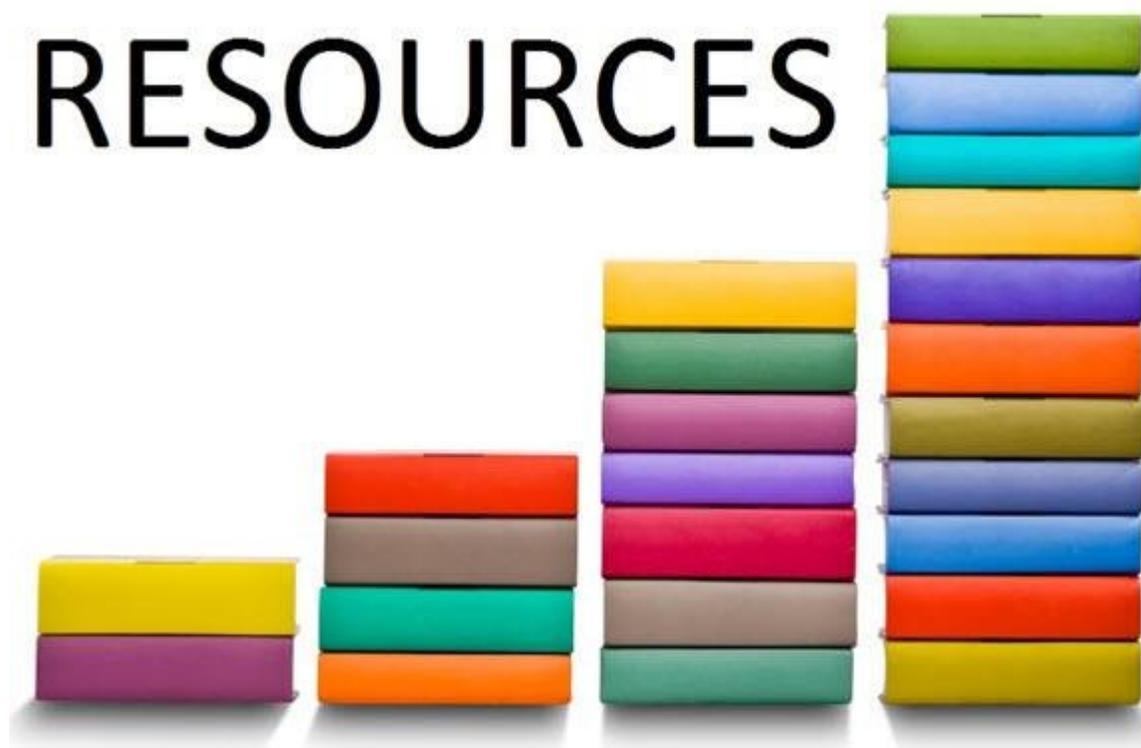
Sometimes, we need to widen our search for the best move and consider less obvious or even counter-intuitive moves that we normally wouldn't. In this video, we discuss four types of such moves: unexpected moves, hidden resources, quiet moves, and backward moves.

The keyword related to these moves is search, because for most people these moves don't appear naturally in their thinking process. Thus, **one needs to recognize situations (usually tactical positions) in which such an unusual resource might indeed be the best move and actively look for it.**

Often, one can find this kind of move only after he goes through all other more natural moves that fail to solve the problem (elimination method).

Unexpected moves, hidden resources, quiet moves, and backward moves are all likely to be anticipated or missed by our opponent, even a very strong one.

Video 6: Opponent's resources – Part 1



The third step in a well-structured calculation process (after prophylactic thinking and candidate moves) is **checking for opponent's resources**. It is similar to prophylactic thinking since we focus on opponent's possibilities in both cases. The key difference, though, is that prophylactic thinking is used before calculating any variations, while the 'opponent's resources' step comes only after we have selected candidate move(s) that we want to calculate.

The idea of this process is to ensure that a candidate move that we like are actually good since the only way to determine whether a certain move is good or not is to check what kind of reply the opponent has against it. If opponent has a strong reply/resource, our candidate could be wrong, even if it looks very attractive initially.

When we look at opponent's possible replies to our candidate moves, we should not content ourselves only with basic replies, but we should search for the strongest possible resources for our opponent, just as seriously we would do for ourselves. This way, we are making sure that we don't miss something important, such as a counter-attack, intermediate move, or a strong positional resource.

In this video, we take a look at three typical reasons why we tend to miss opponent's resources: **conditioned reflexes, dizziness from success, and underestimating poisoned pawns**.

Conditioned reflexes are semi-automatic reactions or natural moves that we make without putting much thought into how the opponent would reply to them because they usually work.

Dizziness from success is another term coined by **GM Alexander Kotov**, from his book "Think like a Grandmaster", which deals with a psychological influence on our decision making. In terms of our topic, dizziness from success is a common type of situation in a chess game in which one has

either already secured a material advantage or is close to achieving a desired result, so he stops calculating carefully because ‘everything wins’ or ‘everything draws’. In such cases, it is easy to miss something important for your opponent, and this could lead to serious blunders.

Poisoned pawns are pawns offered by the opponent that seem to be for free, but there might be a catch. One should always be careful and think twice (double-check opponent’s resources) before taking such a pawn.

Video 7: Opponent’s resources – Part 2

In this video, we explore several other ideas related to opponent’s resources: missing moving parts, missing intermediate moves, missing counter-attacks, and missing unexpected or hidden resources for the opponent. Sometimes, one needs to actively look for less obvious ideas for his opponent, as well.

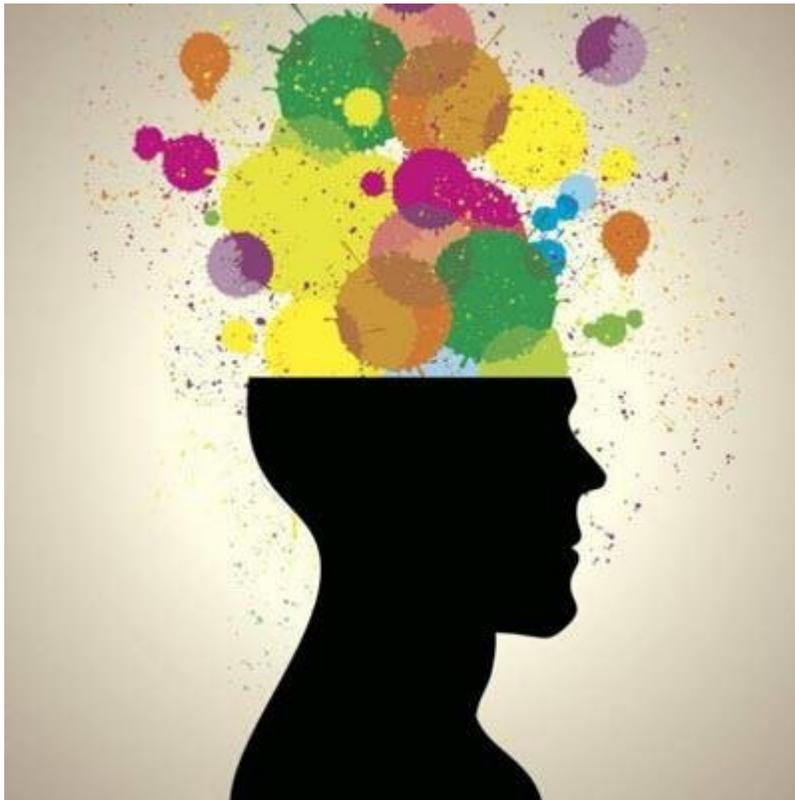
It is important to constantly keep track of opponent’s resources because missing only one important idea for your opponent can have a bad final outcome. Chess is a kind of a game where accumulation of material or positional advantages over the course of the game can be erased with only one tactical mistake, and very often such mistakes come from missing some idea from our opponent.

Missing moving parts happens when we calculate a variation vaguely or inaccurately and we miss that after moving a certain piece, our opponent gets an unexpected tactical opportunity because pieces have changed their positions. It is very closely related to vague visualization of moving parts, which we will cover in the next chapter on visualization.

Intermediate moves and counter-attacks can easily be missed if one gets overly excited about a certain candidate move or a variation that looks really good for him and neglects opponent’s resources in the process.

Unexpected and hidden resources are not easy to spot, especially in advance, so one needs to put all his energy and effort into uncovering them, if he feels like the position contains such resources (think: double-edged tactical positions).

Video 8: Visualization – Moving Parts



Visualization is the ability to see in your mind a variation that could appear on the board after a certain sequence of moves. It is of paramount importance to visualize clearly and accurately variations and positions that we calculate; otherwise, we could be calculating a wrong or even non-existing variation.

In the first part of the course, we learned the proper mechanics of calculation, a structured calculation process that involves: 1. prophylactic thinking; 2. search for appropriate candidate moves; and 3. awareness of opponent's resources. However, this is only one part of the puzzle as one also needs to be able to visualize accurately in order to calculate more complex and long variations. In other words, the skill of visualization is fuel for successful calculation.

Good news is that this skill can be acquired through practice. Even very talented players had to spend many hours practicing and improving their visualization ability. This means that virtually anyone can obtain a solid level of visualization with consistent practice. The idea is to solve as many exercises as possible and, equally importantly, gradually test yourself with gradually more challenging exercises.

In this course, visualization topic is structured in 3 sub-chapters, based on three distinctive features: **1) moving parts** 2) **high traffic**; and 3) **bare trunk**. They refer to different calculation scenarios (types of positions), as explained in their respective videos.

Moving parts, as explained in 'Opponent's resources' chapter, refers to situations in which one should carefully keep track of all the consequences of pieces that are moving, getting exchanged, or sacrificed in a variation that we calculate. Inaccurate visualization in such positions can result in missing which pieces have remained and which have left the board, which squares are under attack



and which have become undefended, which file or diagonal has become available, and which closed, etc.

As a general remark, if you are experiencing trouble visualizing the exact position after several moves of calculation (things become blurry and you lose track of which piece stands on which square), the best thing to do is to return to the starting position and start from the scratch. The reason for that is that it is better to have the right position in your mind after 5 minutes of calculation, than 5 inaccurate positions after 1 minute of calculation. **Over time, your speed of calculation will improve**, so there is no need to rush things initially.

Video 9: Visualization – High Traffic



High traffic refers to scenarios where there are a lot of pieces clustered on a small area of the board. Sometimes, this brings difficulties to visualize accurately all the small changes that occur as we calculate.

These are relatively the most difficult types of visualization exercises because particular attention to detail is required. Positions with knights are especially tricky in such situations because of the knight's unique nature of movement and its control over a lot of squares on a small area of the board.

It is hard to teach visualization of 'high traffic' variations in abstract terms – one just needs to solve many exercises of this type to get a good feeling for them and perfect visualization in such positions.

Go through all the quizzes provided with this course!

Video 10: Visualization – Bare Trunk

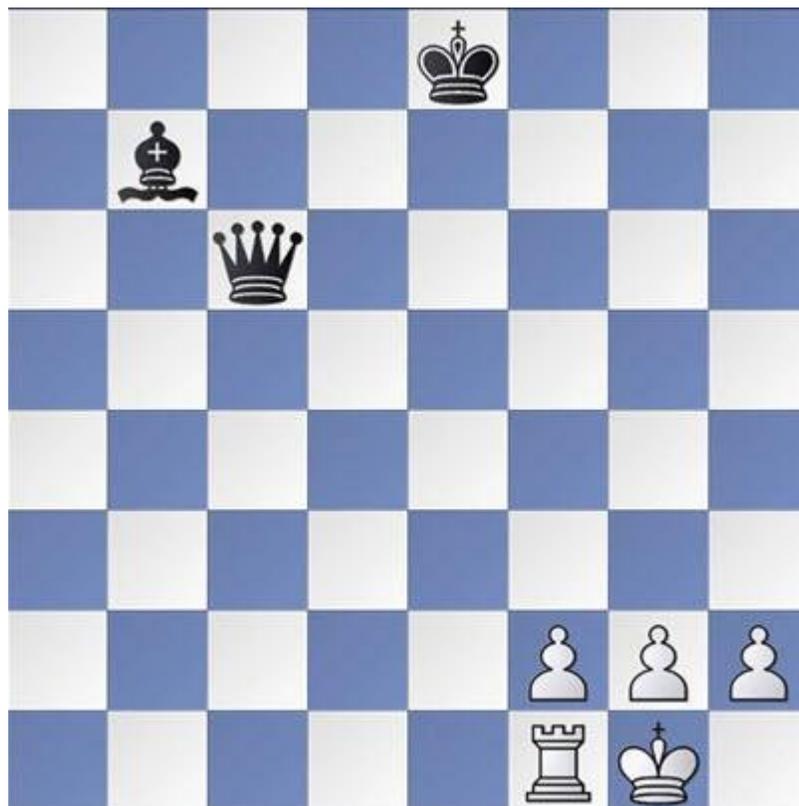


The ‘bare trunk’ type of calculation is the calculation of **long and forced lines**. The term comes from Alexander Kotov’s theory of calculation, which compares calculation of variations to a tree that grows the longer you calculate (calculation depth) and branches out the more candidate moves you consider (calculation width). Thus, when there is only one ‘main’ and long line of the calculation tree, we call it ‘bare trunk’ because it would look like a tall tree without any (or with very few) branches if depicted.

Anything that requires calculation beyond 5 full moves could be put in this category. Sometimes, one needs to calculate more than 10 moves ahead to make a conclusion about a variation or a candidate move. Such long variations can be difficult to visualize because the further we go into the future, the less clear the arising position is. It is therefore important to improve overall visualization skill so that one can confidently visualize positions that may arise at the end of a long variation. For that purpose, I would recommend solving puzzles without moving pieces until you are certain that you have solved it.

Bare trunk variations often arise in endgames (for example, pawn races), as well as in positions in which feature multiple consecutive piece exchanges or forced checking sequences.

Video 11: Simple Positions



These are various types of simple endgames (not theoretical, but rather tactical in nature), endgame studies, and checkmate in 2 or 3 problems. While these positions are simple in terms of reduced material on the board, they are often far from easy (credit to GM Jacob Aagaard for this notion). An important reason for the relative complexity of such simple-looking positions is that lack of pieces on the board significantly increases the mobility of the remaining pieces. This also allows us to fully explore and appreciate the power of all pieces, and their interaction.

Simple positions are very useful as a calculation training tool because limited material simplifies our overview of possibilities in the position (there are no distractions by less important details), so the key ideas can often be calculated in their pure form. In addition, an aesthetic element that is prevalent in such exercises helps us appreciate the geometry of the chess board, as well as tactical ideas, **such as underpromotion, zugzwang, stalemate**, etc.

All calculation rules that we have seen throughout the course (mostly in middle game positions) apply to simple positions. Thus, all of the following: prophylactic thinking; check, take, attack method; search for candidate moves; awareness of opponent's resources; and accurate visualization, can be practiced when one attempts to solve such exercises.

From my own experience (and of many strong players), **solving simple positions brings enormous benefits in terms of improving not only particular skills, such as calculation or endgame knowledge but also overall chess culture and understanding.**

Video 12: Overcoming Resistance



Overcoming resistance refers to a psychological resistance to calculating variations beyond a certain point. We all have a certain threshold beyond which it becomes uncomfortable to calculate or difficult to visualize certain variations. Reasons for that can be various: from difficulty visualizing long variations to reluctance to play with an exposed king. Resistance also kicks in when we are content with variations that we have calculated so far, so we stop calculating further, even though we should in order to make sure that we are not missing something important.

Solving challenging exercises is the best way to increase your resistance levels and build your calculation muscle. In this chapter, we will look at about 20 such positions (3 in the video and the rest in the quiz section).

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